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IN THE MUNICIPAL INDEX AND ATLAS (the annual reference volume of data and condensed catalogs published by the American City Magazine Corporation) readers will find statistical material, and articles on a wide variety of municipal and public works subjects, not published in the monthly issues of the magazine.

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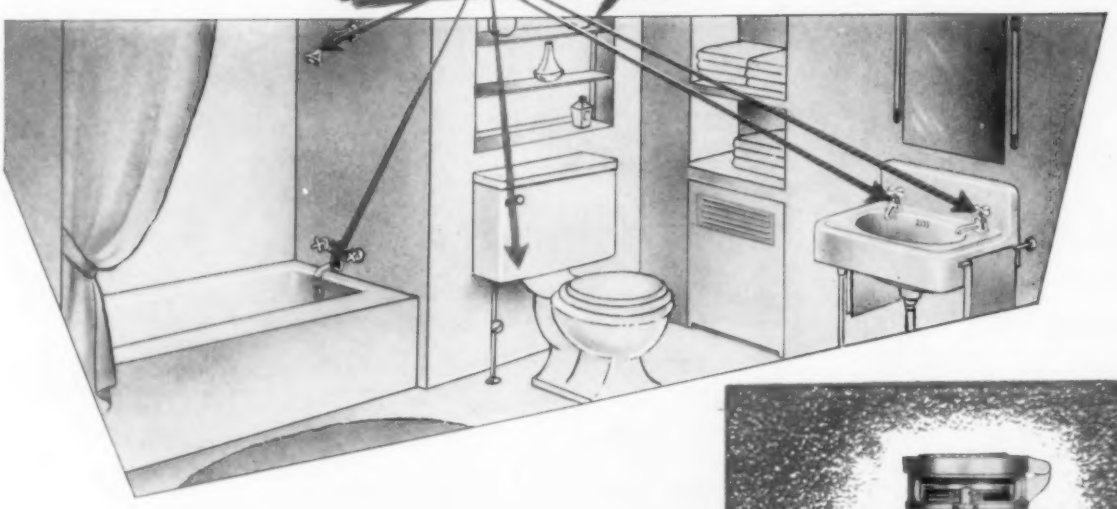
WHO PAYS FOR THE WATER THAT *Leaky* FIXTURES WASTE?



LEAKY fixtures on the consumer's property have long been a trial to waterworks men. The big leaks, such as faulty toilet valves, are easily registered by any water meter in fair condition. These leaks the consumer quickly corrects when the first water bill arrives.

But the little leaks, those of ¼ g.p.m. or less, usually go unnoticed, since the average domestic meter will not measure them with any satisfactory degree of accuracy. Little drops of water accumulating over a period of time will amount to a surprisingly large volume. Who pays for this waste?—the water plant, of course, in the form of increased pumping, filtration and treatment costs.

Small leaks of water become big leaks in revenue. Pittsburgh IMO Meters, through their ability to consistently measure these trickles of water, are materially increasing revenues in thousands of waterworks systems the country over. These meters can be trusted to produce the maximum return from any and all services, even after millions of gallons have been measured. They always operate quietly, last longer and require fewer repairs. They cost less because they measure more.

PITTSBURGH EQUITABLE METER COMPANY

NEW YORK BROOKLYN DES MOINES MEMPHIS DALLAS TULSA CHICAGO BOSTON

MERCO NORDSTROM VALVE COMPANY
Main Offices, Pittsburgh, Pa.
NATIONAL METER DIVISION, Brooklyn, N. Y.

KANSAS CITY PHILADELPHIA SAN FRANCISCO LOS ANGELES SEATTLE HOUSTON COLUMBIA BUFFALO

PITTSBURGH IMO METER

Pittsburgh-National Meters

THE MOST COMPLETE LINE OF WATER METERS IN THE WORLD

Municipal Wage and Salary Increases

Adjusting Incomes to Costs of Living of Public Employees

MANY CITIES ARE GRANTING THEIR EMPLOYEES wage and salary increases to help them meet rising costs of living. This is shown in two surveys, one by the International City Managers' Association and the other by the Milwaukee Municipal Reference Library.

The City Manager study, covering 27 cities under 300,000 population, shows 18 of the cities already have increased the pay of some or all their employees. Five other of these cities anticipate making increases in their next budgets.

Of the 21 cities over 300,000 covered by the Milwaukee study, 9 have increased salaries and wages of their employees and 9 have been asked by various employee groups to consider salary raises.

According to the City Manager study, employees covered by the wage increases vary from city to city. The increases apply to all employees including laborers in six cities, to lower-salaried workers in eight cities, to all receiving less than $3,000 yearly in one city, and to various other groups in three cities.

It was pointed out in the City Manager survey that the cost of living as of September 15, 1941, the latest data obtainable, was 9.6 per cent higher than in August, 1939, according to the cost-of-living index of the U. S. Department of Labor Statistics.

Salary increases in the 18 cities reported in the City Manager study have become effective since July 1, and additional increases for some groups are under consideration in eight of these cities. The cities are Bay City, Ferndale and Flint, Mich.; Berkeley, Long Beach and Oakland, Calif.; Dallas, Longview and Port Arthur, Tex.; Brunswick, Ga.; East Cleveland, Ohio; High Point, N. C.; Kenosha, Wis.; Miami Beach, Fla.; Newport News, Va.; Niagara Falls, N. Y.; Phoenixville, Pa.; and West Hartford, Conn. The five cities anticipating wage increases are Ft. Lauderdale and Tallahassee, Fla.; Lexington, Ky.; Sumter, S. C.; and Wichita, Falls, Tex.

The 9 cities over 300,000 population which have granted salary or wage increases are Atlanta, Cincinnati, Detroit, Kansas City, Louisville, St. Paul, Portland, Ore., Seattle and Washington, D. C. The 9 cities reporting employee requests for increases are Baltimore, Boston, Buffalo, Chicago, Denver, Minneapolis, Philadelphia, Rochester, N. Y., and San Francisco.

In providing salary and wage increases for their employees, cities are using four basic methods or combinations of them, according to above-mentioned surveys.

Procedure in St. Paul

One method, developed by St. Paul, is to grant increases adjusted automatically according to cost-of-living indexes; another is to grant bonuses on this basis. Most of the cities covered by the surveys gave increases of the same amount for all employees regardless of base salary, however, or gave percentage-of-salary raises which may have been the same for all employees or may have varied in size from lower to higher income groups.

The cost-of-living adjustment plan, originated by St. Paul in 1922, was adopted later by San Diego, Columbus and the Fordson public school system at Dearborn, Mich. Under this plan, salaries are adjusted automatically in accordance with cost-of-living indexes prepared by the U. S. Bureau of Labor Statistics. Wages of laborers and unskilled workers, and salaries of top executives, are not affected by the plan, which applies only to workers employed under the St. Paul job classification system.

Procedure of the St. Paul plan is this: When the annual city budget is under preparation for the following year, the Civil Service Bureau reports to the city comptroller the current cost of living for the St. Paul area. Salary adjustments then are written into the budget and the council is notified of these changes. No formal action other than adoption of the budget is necessary. No salary changes are made unless living costs vary at least 2 per cent in comparison with the preceding year. Recent increases in living costs led St. Paul to provide for an eight-point, or about a 6 per cent, increase over salaries in 1940.

Niagara Falls' New Plan

The bonus variation decided upon by Niagara Falls, N. Y., to be initiated in 1942, will provide a larger amount for employees with smaller incomes, giving them a better chance to meet rising living costs. Since the City Council felt that neither a fixed bonus for all employees regardless of salary range nor a fixed percentage of salaries regardless of the base rate would be fair, it decided on a combination of both these methods in determining the bonus.

Under this arrangement, employees will receive a flat raise of $100 plus 5 per cent of salary. The bonus resulting will range from 13⅔ per cent on a salary of $1,200 down to 7 per cent on a salary of $5,000.

Methods of Other Cities

Methods used by other cities in increasing wages of employees are as follows: In *Seattle*, employees in one department received 10 to 17 per cent increases this year. All others except police and firemen, whose wages are fixed by separate action, will receive 1942 increases ranging from $5 to $20 a month.

With a few exceptions, all employees of *Ferndale, Mich.*, received increases. Pay for salaried employees was increased on the basis of 7.5 per cent on salaries of $3,000 and under, and 5 per cent on salaries above $3,000; pay for hourly workers and skilled workmen was increased to the highest prevailing wage rate in the district.

Detroit increased wages of workers in the lower brackets by 10 cents an hour, regardless of their rate of pay. Wages of common, semi-skilled and skilled laborers were raised 5 cents an hour in Louisville, while all other city employees earning less than $2,500 a year were given flat 10 per cent increases.

A reclassification plan in *Kansas City, Mo.*, provided that all annual rate employees earning less than $100 a month should receive a pay increase of $5 a month if they have not yet reached the top of their compensation ranges.

Portland, Ore., has provided a $5 monthly raise for employees receiving less than $1,500 a year, and a $4 monthly raise for those earning from $1,500 to $1,800.

After an analysis of city job by outside consultants, *Flint, Mich.*, raised salaries of all groups of workers. *Miama Beach, Fla.*, gave raises averaging 10 per cent to all its employees.

All employee groups, except police and firemen, were raised in *High Point, N. C.* Salaries below the minimum in each class were increased to the minimum and $5 a month added for each employee for each four-year period of service.

In *Port Arthur, Texas*, salaries were increased with no definite plan, but in an effort to adjust those out of line.

That's the situation your telephone company faces every Christmas. That's why there may be delays on some Long Distance Christmas calls.

• Last Christmas Eve and Day the wires were jammed. The switchboards were manned by regular and extra operators working all through the holiday. Long Distance telephone calls were three, five and at some places *eight* times normal.

We're glad so many folks want to exchange friendly greetings across the miles at Christmas — but sorry that, because of it, we can't supply service as good as usual.

We expect the biggest rush of calls we've ever had this coming Christmas. We'll do our best to prepare for it. But some calls will be slow. Some may not be completed. For these, we ask your patience and understanding. . . . *Thank you, and Merry Christmas!*

BELL TELEPHONE SYSTEM

When you write for that catalog, kindly mention THE AMERICAN CITY.

Our Municipal Notebook

COURTESY OF MUELLER CO.

Replace Obsolete Fire Apparatus

IN GRANTING FIRE-APPARATUS MANUFACTURERS an A-2 prioritiy rating for the purchase of materials and accessories, the Federal Government has recognized the essential character of fire-fighting equipment which this magazine pointed out in October, 1940, and in detail in January, 1941.

From the municipal fire-protection point of view, this whole national defense effort is an opportunity to build up the fire department to a standard of efficiency never before attained. The need has been evident for years. Newspaper-reading taxpayers can now see this need, for the fire department has emerged as a major element of local defense in peace or war emergencies.

Preference Rating Order No. P-45 contains this clause: "A producer shall make no deliveries of fire apparatus except in fulfillment of defense orders, or in fulfillment of contracts or purchase orders which he is directed to fulfill by the Director of Priorities."

To obtain pumping engines of the allowed 500-600, 750, 1000-1250-gallon capacity, cities should write to Fire Equipment Section, Division of Purchases, Office of Production Management, Washington, D. C., for a copy of Form PD-1 to be filled out by the city seeking new apparatus. Having obtained the priority (usually A-10) it is said that deliveries are possible within the usual 90 to 150 working days, though this, of course, cannot be guaranteed. Far-seeing municipal officials are taking into account in these days, as in the past, the service facilities of manufacturers, the availability of parts, and the ability to get a machine back on the road in the event of the unpredictable accident, always possible.

Now is the time to get 12-to-15-year-plus engines on reserve and modern apparatus in the front line. It is well to do this because it is now possible to do it, and municipal officials would be wise to regard it as a local town measure and not as a federal obligation. For the resulting values are permanent, not merely for a possible booming season. Adequate fire protection is a distinctly local responsibility, and now is the time to have it.

Which Product Is Best Suited?

IN THESE TIMES when volume of equipment is everything and money is nothing, many products whose special excellences have been developed and maintained through many competitive years are likely to lose their old identity. Will they reappear in their former high places in industry during the post-defense period?

Engineers in city employ must not bow to a conception of equipment, in which pumps are merely pumps, meters merely common measuring devices, sweepers, sprinklers, collection trucks, city-service trucks and fire engines merely chassis carrying the appropriate equipment.

The pages of THE AMERICAN CITY are filled with enthusiastic descriptions by city officials of new and better local public operations and services made possible by certain definite types and makes of equipment. This justified confidence in the individual initiative of manufacturers, which differentiates products of the same type, has caused city officials to study the type in detail and carefully select instead of merely naming dimensions and capacity. This meticulous choosing, in itself and because of the mental energy it calls forth, is one of the forces which has differentiated similar services in different cities, making one plant good and another only fair.

Parking Meters Save Time and Money

AS CHEMIST for a Sanitation Supply Co. in St. Paul, I have had most serious parking problems in my hurried trips in the St. Paul-Minneapolis area.

The installation of *parking meters* in Minneapolis has reduced my time for trouble and consultation calls about 60 per cent. This has meant dollars in the company's pocket and hours of better service to my clientele.

G. G. PARKIN,
Consulting and Sanitation Chemist,
St. Paul, Minn.

Analysis for Improving a City Insurance Program

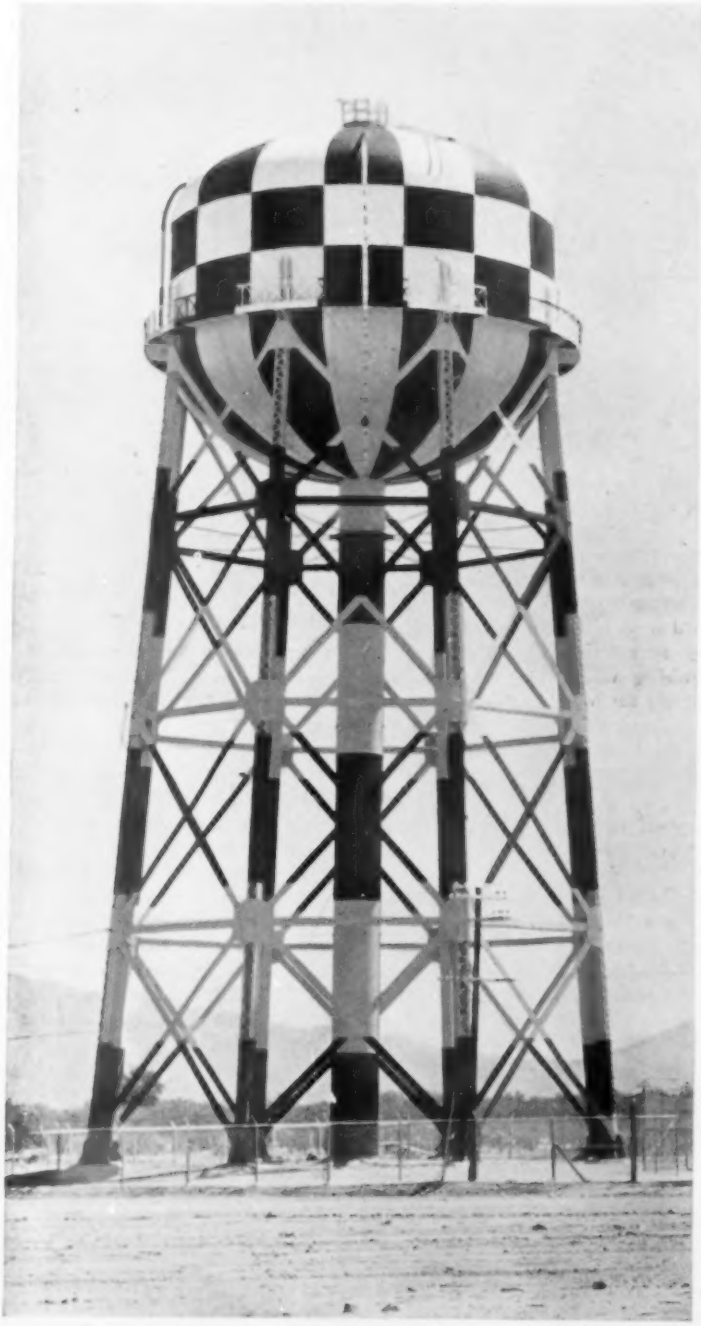
A QUARTER OF A CENTURY AGO, a large city instituted an insurance fund, with a $50,000 nest-egg, which was to make unnecessary the payment of premiums to fire- insurance companies.

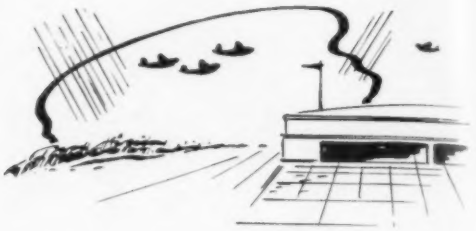
The city has passed through many political vicissitudes, and the present six-months-old administration decided to examine the nest. The Fund now amounts to $858,000, of which $87,000 is in cash and $771,000 is in bonds.

The Fund is responsible for municipal insurance to the amount of $12,587,294, of which $5,419,000 is placed with fire insurance companies. The expenses of running the office amount to $7,500 per year.

A study is being made now of the entire insurance program. The new secretary of the Fund has asked each department to furnish him with a list and description of departmental buildings, and he has asked the Building Department to appraise each property. When he receives these data, he will place 80 per cent co-insurance on each building. The Fund will accept 20 per cent of the risk, the remainder being reinsured. In addition, supplementary or extended coverage insurance will be placed through the insurance companies. It is said that in recasting this entire insurance program, the city's aim in revising and new insuring will be to obtain economical and enlightened insurance service wherever found.

New HORTON ELEVATED TANK





Meets Air Field Requirements at Tucson, Arizona

• • •

500,000-GAL. UNIT DESIGNED TO RESIST SEISMIC FORCE

Aviation training centers, like municipalities, need modern water supply facilities to meet requirements for general service as well as for sprinkling. A typical example of the part played by elevated storage in providing efficient gravity pressure for this type of service is illustrated by the new Horton tank installation at Tucson, Arizona.

The original municipal airport at Tucson has been greatly enlarged for use as a military air training station and now occupies approximately 9,400 acres. The reconstruction included the installation of a gravity water supply system for general water service and sprinkling. Water supply is pumped from wells into a 200,000-gal. collecting tank, and from there into the 500,000-gal. elevated tank shown at the left. Two booster pumps are utilized, and are controlled by the level of the water in the tank. In this way, an adequate reserve to meet peak demands is always available.

To prevent damage by earthquake the Tucson tank is designed to resist a lateral or seismic force of 1/10th gravity.

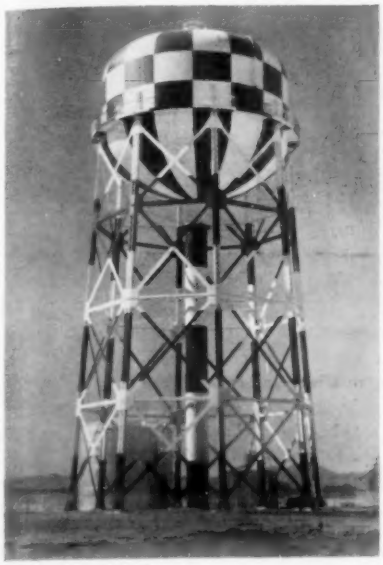
CHICAGO BRIDGE & IRON COMPANY

Chicago....2127 McCormick Bldg.	Philadelphia.1616-1700 Walnut St.	San Francisco...1033 Rialto Bldg.
New York...3308-165 Bway. Bldg.	Washington.811 Washington Bldg.	Houston.....5601 Clinton Drive
Cleveland.2236 Builder's Exchange	Birmingham...1502 N. Fiftieth St.	Tulsa.....1625 Hunt Bldg.
Detroit.....1501 Lafayette Bldg.	Havana.....402 Edificio Abreu	Los Angeles...1403 Wm. Fox Bldg.

Plants at BIRMINGHAM, CHICAGO, and GREENVILLE, PA. *In Canada:* HORTON STEEL WORKS, LIMITED, FORT ERIE, ONT.

Do you mention THE AMERICAN CITY? Please do.

Water-Supply and Storage



The New 500,000-Gallon Elevated Water Storage Tank at the Military Airfield at Tucson, Ariz.

New Water Storage Tank for Tucson, Ariz., Airport

THE WATER SUPPLY, for domestic requirements as well as for sprinkling and irrigating lawns and shrubs, at the Tucson, Ariz., airport of 9,400 acres, which is a military reservation used for training purposes, comes from deep wells about 400 feet deep. Turbine pumps deliver the water into a 200,000-gallon collecting tank, shown at the base of the elevated storage tank in the illustration. There are two Worthington centrifugal booster pumps, with capacities of 1,800 and 800 gpm, which operate intermittently and are controlled by the level of the water in the 500,000-gallon elevated tank. The elevated tank is of ellipsoidal-bottom design, with an ellipsoidal roof, and is 85 feet 7 inches to the bottom. The top is 125 feet above the ground.

The average daily consumption at the airport is around 500,000 gallons, but there have been days when the consumption has been as high as 700,000 gallons. There are 6 miles of mains in the distribution system, varying from 6 to 14 inches in size. The average pressure in the system is around 60 pounds.

The tank is of unusually heavy construction, due to the fact that the tower is designed to resist a lateral or seismic force of one-tenth gravity. The elevated tank was fabricated and erected by Chicago Bridge & Iron Co.

New Purchasing Policy Under S. P. A. B. Orders

Under date of November 12, 1941, the American Water Works Association called the attention of water works officials to S.P.A.B. Order No. 14 establishing a new policy for authorizing the purchase of critical materials, and announcing that a system of allotment of all such materials is to be put into effect for 1942.

All water works officials should promptly return the study "Public Water Supply Annual Requirements and Stores Records" dated October 1, 1941. On this record in writing any exceptions to, or criticism of the document as it was sent out for review. Unless the AWWA receives comments, it will be asumed that the document is correct and satisfactory to those who receive it. No additional copies of the memorandum are available, but it will be published later in the Journal of the AWWA.

For instructions, counsel, and help, keep in touch with the office of the American Water Works Association, 22 East 40th Street, New York, rekarding purchases, priorities, and other waterworks needs.

Water-Supply Data from Illinois Cities

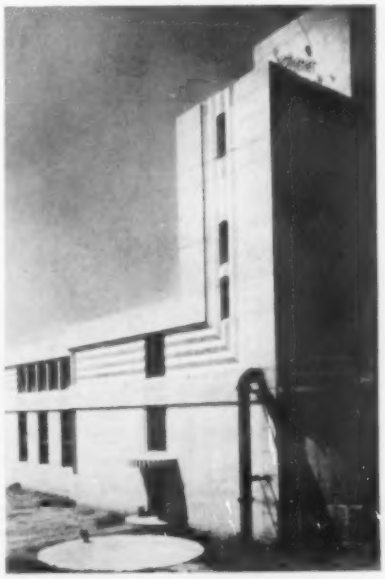
ACCORDING TO A REPORT of the Division of Sanitary Engineering of the State Department of Public Health of Illinois, there are 554 sources of water supply in Illinois, of which 446 are ground water supplies, 107 are surface supplies, and one is a combination of an infiltration gallery and wells. The total number of cities with public supplies is 643, of which 586 are municipally owned and 57 are privately owned. Of the 643, a total of 460 are supplied with ground water, 183 with surface water, and 37 are supplied by the city of Chicago, 16 by East St. Louis, and 35 by another municipality, making a total of 88 cities which are supplied by other municipalities.

The group of 643 municipalities consumes 1,186,082,000 gallons daily, of which 950,000,000 gallons is chargeable to the city of Chicago alone. The daily per capita consumption throughout the entire state is 195 gallons, the per capita consumption in Chicago is 264 gallons, and the daily per capita consumption exclusive of Chicago is 99 gallons. The highest total mineral content of a public water supply in the state of Illinois is at Ipava, where it amounts to 2,964 ppm. The lowest total mineral content is at Olney, where it is 92 ppm. The hardest mineral content is at Kempton, which is 1,312 ppm; the softest untreated water is at New Baden, where the hardness is only 12 ppm. The highest iron content is at Maroa, where the iron amounts to 11.0 ppm.

The table below shows the types of treatment given to the water in cities in Illinois, with the number of cities having the various types of treatment for ground water and surface water, and the total.

Type	Ground Water	Surface Water	Total
Purification and chlorination	—	93	93
Purification, softening, iron removal and chlorination	—	8	8
Softening, iron removal and chlorination	16	—	16
Softening and iron removal	32	—	32
Softening and chlorination	1	—	1
Softening only	5	—	5
Iron removal and chlorination	6	—	6
Iron removal only	20	—	20
Chlorination only	43	2	45
Chlorination for emergency	7	—	7
Rechlorination (Chicago water)	—	1	1
Untreated surface supplies	—	3	3

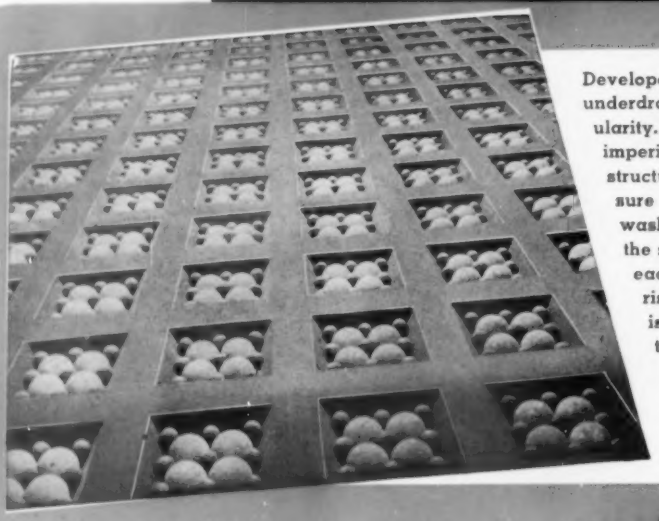
The total population served by public water supplies in Illinois is 6,074,221, which is 79.5 per cent of the total population of the state, or represents 94 per cent of the urban population. A total of 4,760,239 are supplied by surface water, and 1,313,982 by ground water. A total of 5,308,272 are supplied with chlorinated water.



The Municipal Water-Works Plant Built on the North Side of El Reno, Okla., in 1939-40

THE WHEELER
False Filter Bottom

PERMANENT • EFFICIENT • ECONOMICAL
Perfect Wash Water Distribution
Corrosion Completely Eliminated



Developed in its present form in 1932 this unique underdrainage system has grown enormously in popularity. Being cast monolithic, and embodying only imperishable materials, it is as permanent as the structures themselves. The false slab, over a pressure chamber, insures uniform distribution of wash water to all areas of the bottom alike, and the similar interstices among the spheres within each hopper guarantee perfect diffusion of the rising wash water into the filter bed. The cost is usually not more than for less efficient systems. All metals are eliminated, thus avoiding corrosion and incrustation forever.

NOTE THIS CONVINCING LIST OF INSTALLATIONS

	GPD
Mahoning Valley Sanitary District, Youngstown, Ohio	40,000,000
Alabama Ordnance Wks., E. I. Du Pont de Nemours & Co., Childersburg, Ala. —2 Plants	26,700,000
Radford Ordnance Wks., Hercules Powder Co., Pepper, Va.	25,000,000
Ecusta Paper Corp., Pisgah Forest, N. C.	22,500,000
Champion Paper & Fibre Co., Canton, N. C.	10,000,000
City of Sandusky, Ohio	9,000,000
City of Charlotte, N. C.	8,000,000
City of Raleigh, N. C.	8,000,000
Southern Bleachery & Print Wks., Taylors, S. C.	7,500,000
City of Rocky Mount, N. C.	6,750,000
Proximity Mfg. Co., Greensboro, N. C.—2 Plants	6,500,000
City of Hamilton, Ohio	6,000,000
City of Gloversville, N. Y.	6,000,000
City of Greensboro, N. C.	6,000,000
City of Newport News, Va.	6,000,000
Ducilo S. A. Productora de Rayon, Buenos Aires, Argentina	4,500,000

	GPD
Lanett Bleachery & Dye Wks. Lanett, Ala.	4,500,000
Aluminum Co. of Canada, Ltd., Arvida, Quebec	4,000,000
Fort Bragg, N. C.	4,000,000
National Steel Car Corp., Ltd., Hamilton, Ontario	4,000,000
City of Wilson, N. C.	3,000,000
Ware Shoals Mfg. Co., Ware Shoals, S. C.	2,300,000
Rosemary Mfg. Co., Roanoke Rapids, N. C.	2,250,000
Morgantown Ordnance Wks., E. I. Du Pont de Nemours & Co., Morgantown, W. Va.	2,250,000
City of Fayetteville, N. C.	2,000,000
Canadian Industries, Ltd., Beloeil, Quebec	2,000,000
City of Aguadilla, Puerto Rico	2,000,000
Borough of Media, Pa.	2,000,000
Reynolds Metals Co., Lister, Ala.	1,875,000
City of Tarboro, N. C.	1,500,000
City of Hickory, N. C.	1,500,000
E. I. Du Pont de Nemours & Co., Belle, W. Va.	1,500,000

	GPD
E. I. Du Pont de Nemours & Co., Martinsville, Va.	1,440,000
Borough of Danville, Pa.	1,200,000
Town of Rockingham, N. C.	1,000,000
Town of Albemarle, N. C.	1,000,000
Town of Southern Pines, N. C.	1,000,000
City of Humacao, Puerto Rico	1,000,000
Duke Power Co., Spindale Water Wks., Spindale, N. C.	1,000,000
Town of Weldon, N. C.	1,000,000
Fort Belvoir, Va.	1,000,000
Piedmont Mfg. Co., Piedmont, S. C.	750,000
The Clemson Agricultural College, Clemson, S. C.	750,000
Town of Orange, Va.	500,000
Town of Blowing Rock, N. C.	500,000
City of San German, Puerto Rico	500,000
Town of Elkin, N. C.	500,000
Cliffside Mills, Avondale, N. C.	300,000
Town of Granite Falls, N. C.	300,000
State Farm for Misdemeanants, Maidens, Va.	250,000
Navy Mine School, Yorktown, Va.	150,000

MECHANICAL EQUIPMENT BY ROBERTS FILTER MFG. CO.
600 COLUMBIA AVE. DARBY, PENNA.

We invite inquiries from Engineers and Waterworks Officials who are interested in eliminating sand bed troubles without using mechanical or hydraulic means to supplement the usual high rate water wash. Wheeler False Bottoms can be installed in existing filters. Many plants which have replaced lateral type underdrains with this efficient means of distributing wash water have forever eliminated sand bed difficulties which theretofore beset them. Write us for technical information.

This name plate is our pledge of cooperation—of adherence to specifications—of quality of materials —of excellence of workmanship—of continuing interest long after the contract price has been paid.

Snow and Street Cleaning

One Quarter-Million for Snow Removal

DURING THE WINTER OF 1940-41 Minneapolis, Minn., spent upwards of $255,000 to remove the snow from its streets and alleys. During the removal of the heavy snow on Armistice Day, 1940, more than 600 men were employed.

The city is divided into 32 snow-plow routes, each route being about 30 miles in length. There are approximately 1,000 miles of streets to be plowed, and there are 3,940 alleys. The work is done under the direction of Fred T. Paul, City Engineer. There are six equipment storage centers throughout the city, each in charge of a district supervisor. Close touch is kept with the Weather Bureau to check impending snowfall and its probable amount. The main streets are plowed out first, then the cross-streets, and finally the alleys.

With the exception of the snow-loading equipment, the trucks, tractors, etc., are used throughout the year on the streets. The city has an investment of about $300,000 in this equipment, which includes, among other equipment, 11 large patrol graders, 14 large crawler tractors, 4 snow loaders, 64 fast trucks. Four of the graders and eight of the big tractors are equipped with large plows and wings.

Snow removal starts immediately a storm has ceased and continues night and day until the streets are open. Alleys are not plowed unless they are impassable. It requires special equipment for alley plowing, and the work is much slower.

—From data furnished by the Minneapolis Civic Council for Public Information.

Move the Parked Cars to Aid Snow Removal

TWO NEW YORK CITIES have adopted new ordinances, or amended their traffic regulations, to facilitate snow removal. When cars are parked at curbs, there is nothing for a city to do but to plow the snow up against the cars, which makes it all the more difficult to move them later.

Poughkeepsie, N. Y., has adopted an ordinance authorizing the removal of vehicles of any kind from the streets during a storm or while the streets are being cleaned of snow or other obstruction.

Buffalo, N. Y., has amended its traffice regulations so as to prohibit the parking of cars at any time from 2:30 A.M. until 8 A.M. on any day during the period from December 1 of any year to May 1 of the following year. This ordinance was adopted to facilitate the removal of snow.

Less Snow, More Machines, Reduce Winter's Costs

RECORDS OF THE DEPARTMENT OF STREETS AND ENGINEERING of the city of Springfield, Mass., indicate that snow-removal costs for the year 1940 were $80,000, including the expense of sanding the streets following sleet storms. The costs for several previous years were: 1935, $266,653.12; 1936, $246,676.06; 1937, $17,817.71; 1938, $175,975.02; 1939, $70,038.22 ; 1940, $105,771.70.

Less frequent and lighter snowfalls, together with the increased use of mechanized equipment in place of hand labor, has been a large factor in reducing the costs of snow removal and the sanding of streets in the last two years. This work is done under the direction of Cornelius W. Phillips, Superintendent of Streets.

Army Camps Boom Trade, Increase City Budgets

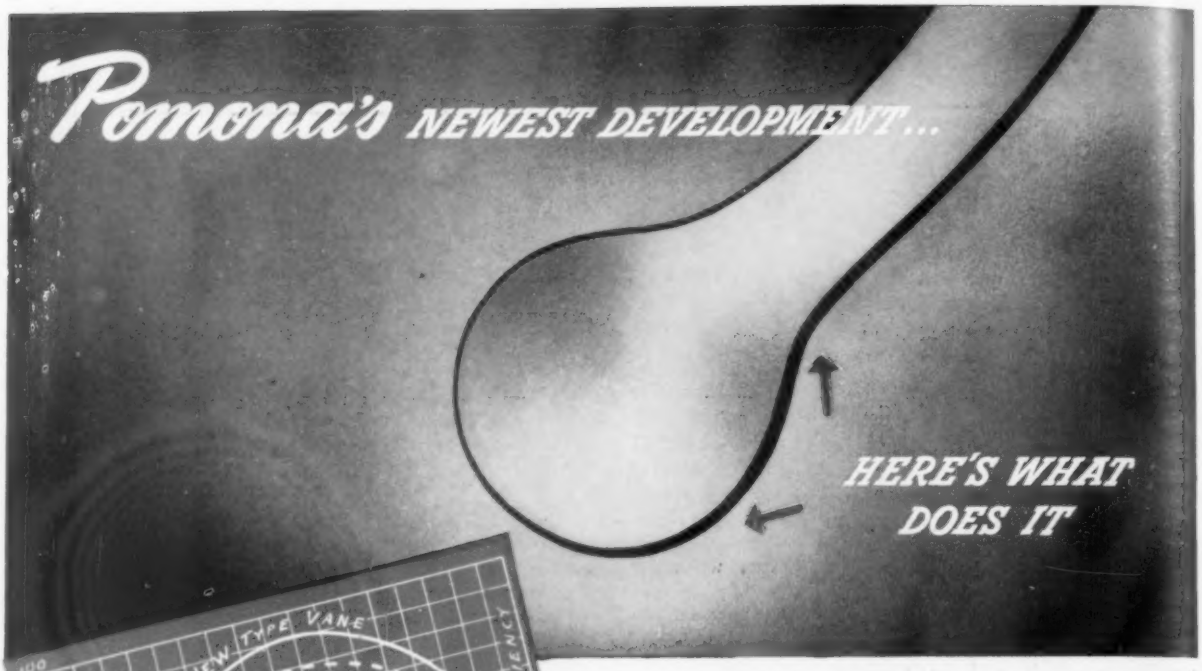
OFFICIALS OF COLUMBUS, GA., an Army boom town near Fort Benning, where a monthly payroll of $4,500,000 is distributed, realize that it's good business for the merchants of the town but it takes a lot out of the city treasury, and, in fact, raises taxes just to meet street-cleaning and refuse-collection costs. On Army pay days, the rush of retail trade is so great that the littered streets take on the look of circus day, and the Sanitation Department is called on for double duty.

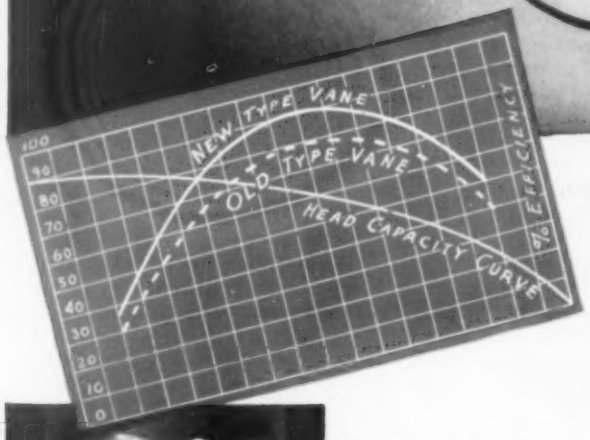
According to a report of the American Public Works Association, refuse collections for the first quarter of 1941 in Columbus, showed an increase of 40 per cent over the same period in 1940, before thousands of soldiers and construction workers were added to the local population. The increase in traffic has increased collection difficulties because pick-ups from alleys can be made in less than 40 per cent of the business section. To meet this problem, additional equipment and more street cleaners have been provided, collection schedules rearranged, and householders asked to separate refuse for collection.

Other public works problems have shown up in Columbus. The amount of maintenance required on both paved and unpaved streets has grown because of increased traffic, and the number of service cuts necessary for providing gas, water, and sewers to new building construction.

More than 90 per cent of the laborers on city WPA sewer and paving projects have gone over to private and defense construction work.

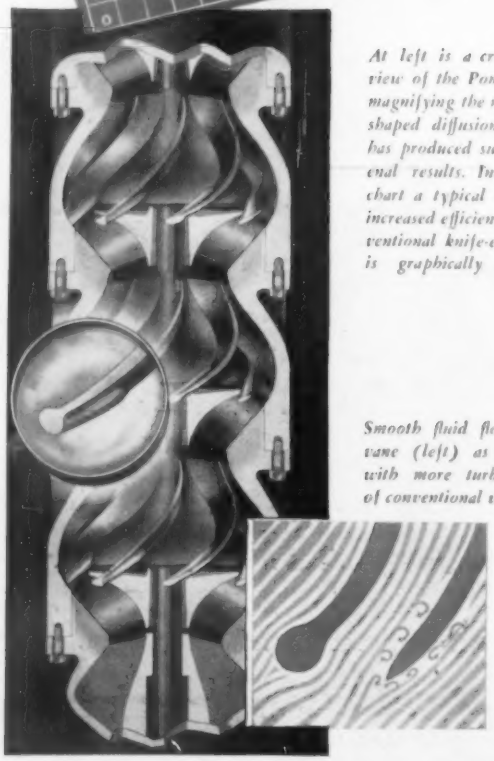
Duluth, Minn., uses this D4 tractor and LaPlant-Choate V-type snow-plow to widen out plowed streets in the residential section. Icy streets and a 40-mile gale and the heavy snow which came the day after this photograph was taken would have tied up traffic, but the plow had widened the traffic ways so that one trip through after the storm opened them to traffic





A BULBOUS VANE END SHAPE

that cuts pumping costs to a NEW WORLD'S LOW



At left is a cross-sectional view of the Pomona Pump, magnifying the new bulbous shaped diffusion vane that has produced such phenomenal results. In the above chart a typical example of increased efficiency over conventional knife-edged vanes is graphically illustrated.

Smooth fluid flow of new vane (left) as contrasted with more turbulent flow of conventional vane (right)

Again Pomona pioneers another far-reaching advancement in pump design — a development that boosts the already high efficiency of its pumps as much as 10%.

By replacing the conventional sharp-edged diffuser vanes with vanes having a bulbous end shape and a recess behind the bulb, Pomona engineers have . . . smoothed out the flow pattern . . . practically eliminated turbulence and eddy currents and greatly reduced hydraulic losses.

As a result, peak efficiencies of Pomona Vertical Pumps are in some cases above the 90% mark. What's more, the bulbous vane strengthens construction . . . has more wearing surface to prolong the life of the pump . . . insures maintenance of high operating efficiency over a greater period of years.

Whatever your pumping problem, find out today what this new development can mean to you in reduced power consumption . . . in lower over-all cost per gallon of fluid pumped!

POMONA PUMP CO., 120 Broadway, New York City. Plants at 4301 So. Spring Ave., St. Louis, Mo., and 206 Commercial St., Pomona, California.

POMONA
Water-Lubricated
PUMPS

● *Write for Engineering Bulletin No. 7 describing this important development in greater detail.*

When you write for that catalog, kindly mention THE AMERICAN CITY.

Sewage Works Progress

Corpus Christi Sells Effluent and Sludge

ACCORDING TO A RECENT REPORT received from Corpus Christi, Texas, arrangements have been made for the sale of the effluent from the sewage-treatment plant to an oil refinery for condenser water. The effluent, which ordinarily goes to waste, now brings in a monthly revenue of $600, being sold to the oil refinery at a rate about one-fifth the cost of city water. The contract requires that the effluent must be delivered to the refinery free of settleable solids.

The Corpus Christi plant is also receiving about $70 a week from the sale of sewage sludge after it has been air-dried and pulverized.

New Sewerage Facilities at Lindsey, Ohio

THE VILLAGE OF LINDSEY, OHIO, in Sandusky County, has a sewage disposal system, approved by the State Department of Health and costing $91,000. The system includes a sewerage system with a treatment plant consisting of Imhoff tank, dosing chamber, alternating siphons, sludge pump and piping, sludge drying beds, and four sand filter beds.

While waiting for suitable weather last spring for the building of the treatment plant, work was started on the laying of 14,991 feet of pipe and the building of 39 manholes. The pipe varies from 6 to 15 inches in diameter and is both concrete and vitrified.

When warm weather arrived, the construction of the treatment-plant facilities was started, beginning with the excavation of the filter beds, followed by the construction of a dike between the location of the treatment plant and the adjacent Big Muddy Creek. The creek bank, on the side at which the plant is located, is being riprapped to strengthen it to prevent erosion and landslides. The site chosen for the Imhoff tank had ledge rock at a depth of slightly more than 9 feet which required drilling and blasting.

Test-hole data throughout the sewerage system showed the earth to be stable yellow clay suitable for skeleton type sheathing. However, after work started, some strata of fine sand were encountered which ran through the cracks between the shoring, and even through knotholes. Trench excavation for 2,695 feet of vitrified pipe was done by machine, and all other trench excavation was done by WPA labor.

A 12-inch interceptor, installed under the New York Central railroad tracks for a distance of 30 feet, was encased in a 36-inch, 10-gage corrugated iron pipe at a depth of 10 feet. The intercepting sewer, inside the 30-inch pipe, is cushioned on sand to prevent vibration as well as to provide an even bearing for the pipe.

The plant, which will be completed shortly, will have a capacity of 336,960 gallons per 24-hour day. It is located at the northeast corner of the village on the east bank of Big Muddy Creek.

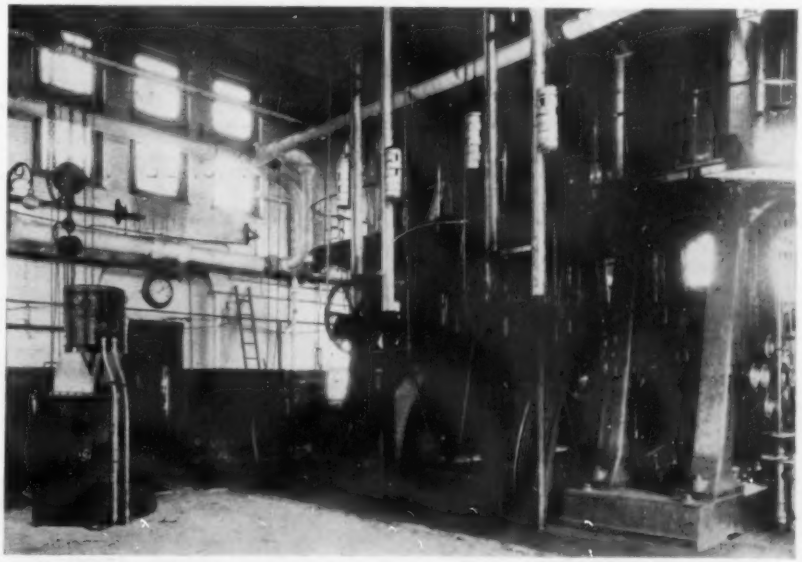
New Sewage Works Use Sludge Gas Increasingly

A RECENT STUDY BY THE AMERICAN PUBLIC WORKS ASSOCIATION shows that a large percentage of the cities building new sewage-treatment plants are including equipment for the use of sewage-sludge gas at the plant or for sale. Once something of an experiment, the sludge-gas engine installations are now part of sewage-works equipment in well over 100 cities.

Of over 165 individual engines installed, the largest is at the Jamaica plant of New York City, which has a battery of three engines of 1,440 hp each. Other large cities using sludge-gas engines include Baltimore, Cleveland, Columbus and Toledo, Detroit, and Washington, D. C. Among the small installations are 15-hp engines at Edwardsville, Ill., and State College, Pa. More than half the 165 engines drive generators to produce electric power for plant use or for sale, while the remainder drive blowers and pumps for treatment-plant operation.

The development of sludge-gas use in combustion engines in the United States goes back to 1926, when Plainfield, N. J., installed three gasoline engines converted for sludge-gas use. The first engine designed specifically to operate on sludge gas was installed in Springfield, Ill., in 1932 at a cost of $15,728. In nine months the equipment showed a saving of 80,500 kilowatt-hours a month, almost one-half the entire cost of installation, figuring the cost of electricity at 1 cent per kilowatt-hour. Toledo's sludge-gas engines, installed in 1936, cost about $40,000, an amount saved in the first 2½ years of operation. Since that time, the average net savings have amounted to more than $12,000 a year.

Local conditions determine whether or not it is economical to salvage sludge gas. Cities which have a low-cost gas supply, for example, would not find sludge-gas salvage worth while. Local conditions also determine the manner in which sludge gas can best be used. If not used by the city, the salvaged product may be sold as gas directly to the local gas company, or to some industry, for the generation of steam or electric power.



An interesting comparison of the old and new in sewage pumps. At the right is one of the old steam pumping engines at the Ernest Street pumping station, Providence, R. I., which has been replaced by the more compact Warren vertical shaft low-lift centrifugal pump and General Electric motor. (See THE AMERICAN CITY, *April*, 1941, *pages* 56-57.)

FOR-AIR RAIDS-FIRE AND OTHER EMERGENCIES

THE DIAPHONE

IS THE IDEAL PUBLIC ALARM

Characterized by:

GREAT SOUND-PRODUCING POWER — AUDIBLE RANGE AND SOUND PENETRATION—DISTINCTIVE TONE—EFFECTIVE CODING OF SIGNALS — RESERVE CAPACITY — OPERABILITY UNDER ALL CONDITIONS —

MODERN warfare is not confined to isolated fields of battle—entire populations are involved, and fire is one of the deadliest weapons. . . . In the event of war, warnings to the populace of impending air raids must be given swiftly and effectively if lives are to be saved. . . . Instructions must be given to the fire fighters and forces on patrol duty. . . . In such emergencies signals given by sound with centralized control and by skilled operators provide the swiftest and most dependable means of disseminating intelligence throughout a municipal area.

THE Diaphone, preeminent for more than 50 years as a public alarm for fire and other emergencies, is ideally adapted for all forms of public alarm signaling in time of war. Existing municipal fire alarm circuits may be utilized for air raid and other emergency alarms without impairing the fire service.

COMPLETE INFORMATION WILL BE SUPPLIED TO ANY AUTHORIZED OFFICIAL UPON APPLICATION

THE GAMEWELL COMPANY

NEWTON UPPER FALLS, MASSACHUSETTS

Public Safety

New Police HQ in Texas

THE CITY OF UNIVERSITY PARK, TEXAS, whose 345 per cent increase in population within a decade stamps it as one of the fastest growing cities in the United States, is celebrating a triple triumph in police progress: A newly completed one-story police-station annex, adjoining the city hall; a 50-watt two-way police radio system; four new 8-cylinder Pontiac Silverstreak police-squad cars. The new station, housing the broadcasting system and the functional offices of the police department, conforms with the Williamsburg-period architecture of the city hall. It is one-story, red brick with Texas limestone trim, 50 x 36 feet.

Other rooms include the police chief's office; a fingerprint and records bureau; a photographic dark room; a two-cell jail holdover; a men's wash room; and a combination garage and workshop for upkeep of squad cars and police equipment. Walls and woodwork are painted white; lighting is by glass and silver combination fluorescent lights.

All 20 officers, including three sergeants, a captain and a lieutenant, hold radio-operator licenses. The administrative body consists of Elbert Williams, Mayor, Lynn V. Lawther, Police Commissioner, and E. Glenn Martin, Finance Commissioner. These men are serving their second two-year term, having been unopposed in the 1940 election.

ROSALIND WILDEN,
Director of Publicity, University Park, Dallas, Texas.

At Right, City Hall and New Police Annex at Far Right

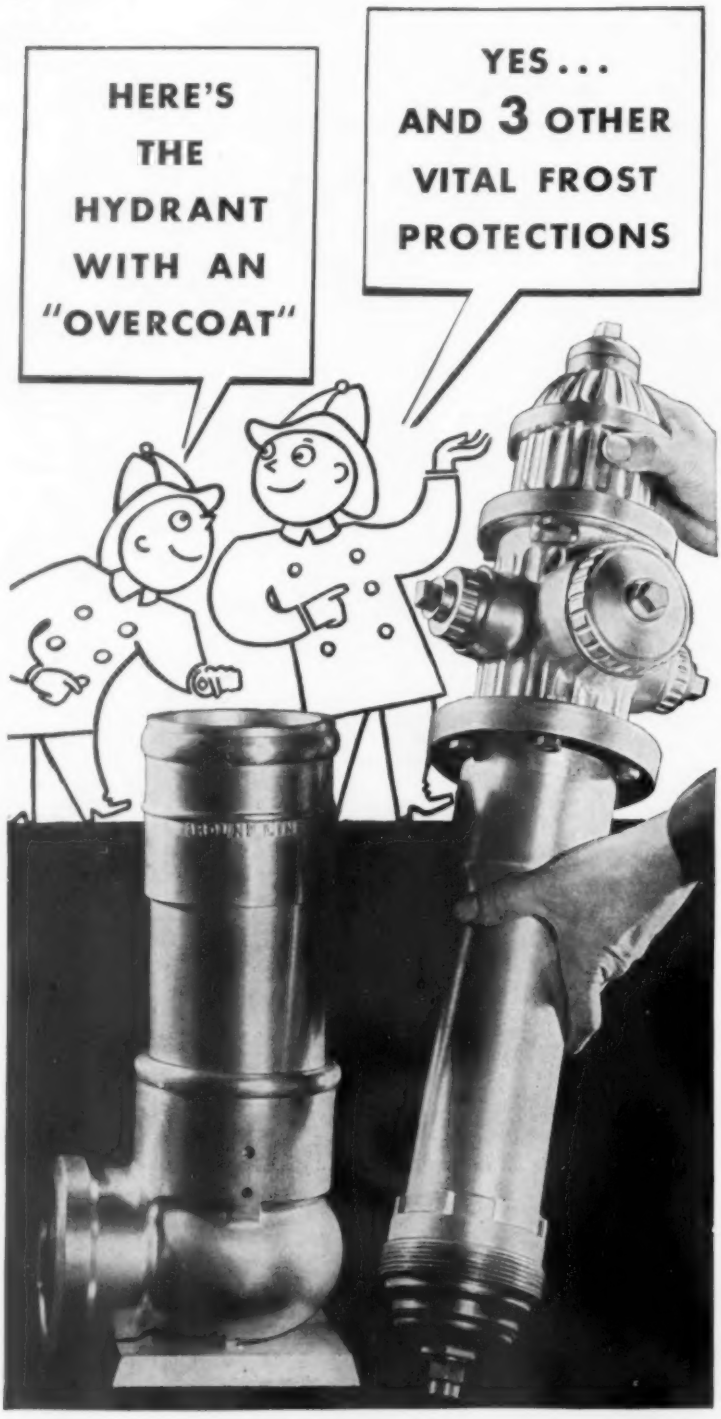
At Left, Police Radio Housed in the New Annex at University Park, Texas

Parking Headache Gone in Bridgeport

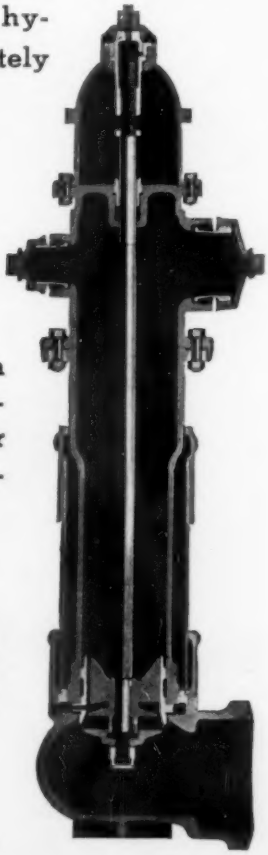
By CHARLES A. WHEELER
Superintendent of Police, Bridgeport, Conn.

WE HAVE FOUND PARKING METERS TO BE THE SOLUTION to our parking problem— and it is a problem which confronts a great many cities. The all-day parker has disappeared from Bridgeport, and a downtown shopper can now park in front of a store to transact business comfortably, departing in a reasonable time to permit a like convenience to another shopper. Merchants report increased sales in the city center. The shopper's smile is a sign that the police headache of the century has been relieved.

Some of Bridgeport's Parking Meters (These Are Mi-Cos) Which Have Relieved Congestion and Pleased Shoppers and Merchants



The Mathews is the most completely winter-proof hydrant ever designed. First, its water-carrying parts are insulated by the dead-air space between barrel and protection case. Second, the protection case is loose, free to lift with frost-heaved ground so that no strain is put on the hydrant itself. Third, the operating threads are in a dry chamber, protected from internal and external water so that they cannot freeze. Fourth, the drain valve is a positive and automatic part of the main valve itself, and cannot fail to drain the hydrant completely after use.



Write for a detailed description or model demonstration.

MATHEWS HYDRANTS

Made by R. D. WOOD COMPANY

Manufacturers of Sand Spun Pipe (centrifugally cast in sand molds) and R. D. Wood heavy-duty gate valves for water works

400 CHESTNUT STREET, PHILADELPHIA, PA.

Why not remember to mention THE AMERICAN CITY?

Vol. LVI, No. 12 The American City December, 1941

Neighborhood Redevelopment

Chicago Plan Commission Issues Notable Report to Stimulate Operations Under New Law

CITY planning aspects of the Neighborhood Redevelopment Corporation Law, recently enacted by the Illinois Legislature,* are analyzed and illustrated in an exceptionally attractive 24-page report on "Rebuilding Old Chicago," published last month by The Chicago Plan Commission (George T. Horton, Chairman; T. T. McCrosky, Executive Director).

Studies are presented of three actual sites, to demonstrate methods of adapting typical existing conditions to modern city planning techniques. Such neighborhood rebuilding, as set forth in the report, would mean to:

Tenants and Home Owners—
- Attractive surroundings with light and air
- Safety, privacy and quiet
- Accessible parks and playgrounds
- Convenient shopping
- Community interests
- Economic and social stability
- Less time spent going to work
- Realistic rents and lower taxes

Investors—
- An investment in the "City of Tomorrow"
- Stable values
- Steady return
- Protection from obsolescence

Local Merchants—
- More shopping in the neighborhood
- Ease of access to stores
- Concentrated shopping centers
- Elimination of excess store frontage
- Stronger purchasing power

Local Government Agencies—
- Reduced tax delinquency
- Increased tax return
- Less street area to maintain
- Lower cost of fire and police protection
- More recreation space—less juvenile delinquency and crime

The Taxpaying Public—
- More evenly distributed taxation
- More public service for the tax dollar

All the People—
- Safer driving and widened arterial streets
- Gradual elimination of the slums
- Civic pride in a job well done

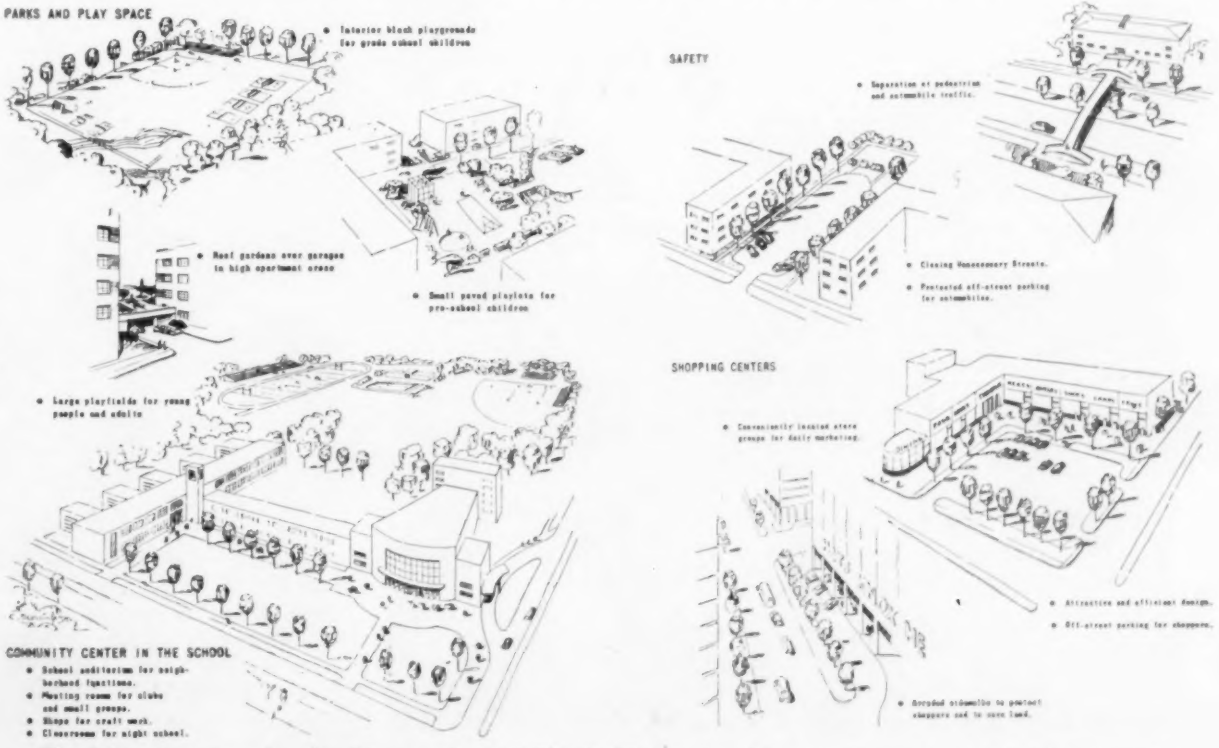
In a foreword to the report, Executive Director McCrosky says:

"Housing built under the Neighborhood Redevelopment Corporation Law is only one means of coping with Chicago's problem of slums and blight. It cannot rehouse all of those families who need better accommodations, and the extent of its success in the limited field to which it applies is still for the future to determine. The rents which must be charged for new housing built by private enterprise are higher than a large part of the people living in

(Concluded on page 71)

* See THE AMERICAN CITY for August, 1941, page 37.

ELEMENTS OF DESIGN FOR GOOD LIVING


PARKS AND PLAY SPACE
Interior block playgrounds for grade school children
Roof gardens over garages in high apartment areas
Small paved playlots for pre-school children
Large playfields for young people and adults
COMMUNITY CENTER IN THE SCHOOL
School auditorium for neighborhood functions.
Meeting rooms for clubs and small groups.
Shops for craft work.
Classrooms for night school.
SAFETY
Separation of pedestrian and automobile traffic.
Closing Unnecessary Streets.
Protected off-street parking for automobiles.
SHOPPING CENTERS
Conveniently located store groups for daily marketing.
Attractive and efficient design.
Off-street parking for shoppers.
Grouped automobile to protect shoppers and to save land.

The sketches here shown in reduced form compose a striking double-page spread in two colors, in "Rebuilding Old Chicago"

Refuse-Handling Studies in Lower Merion Township, Pa.

A Well-Organized Collection System in Growing Township with Incineration for Disposal of Combustibles

By W. E. ROSENGARTEN
Lower Merion Township Engineer, Ardmore, Pa.

A PUBLIC body is called upon to render a varied field of services for its constituents. Each new service increases the cost of government and its tax load. It is therefore necessary to weigh carefully not only the need for the service but whether it can be done better and cheaper by the public at large than by the individuals themselves. Since there is an enforced payment by taxation for a municipal service, the service should be a public necessity for the health or welfare of the community.

A study of the collection and disposal of ashes and trash will readily lead one to the conclusion that this service fulfills the foregoing requirements. Household waste materials constantly collect and if not regularly removed soon become a nuisance, as well as a health and fire menace. Our studies have also shown that public collection gives the service at a fraction of the cost of private collection.

In February, 1921, Lower Merion Township first tried municipal refuse collection. The service was weekly in winter and monthly in summer, making a total of 35 collections yearly. The material was picked up from the cellars, and a direct charge was made to each one receiving this service of from $5 to $36 per year, depending on the size of the house. This covered slightly less than 60 per cent of the cost. Only 350 houses, or one-third the total in one of the built-up sections —Ardmore—utilized the collection. This was not considered successful, and service was discontinued in February, 1924. The average collected per house was 10,441 pounds of ashes and 913 pounds of trash. The cost was $4.12 per ton, or $21.27 per house per year.

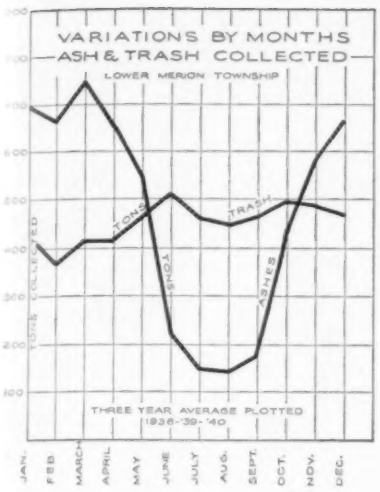
An increasing demand for public collections led the Board of Commissioners to institute a collection of household wastes in September, 1931. The entire cost was paid from regular township funds.

Municipal Collection of Trash in a Private Drive, in Lower Merion Township, Pa.

At first the more thickly populated sections were covered by the collection. These included about 45 per cent of the area and at least 80 per cent of the population. Later, the area served was extended to include the entire township of 25 square miles and 40,000 people. The density of population is 1,600 per square mile, or 2.5 per acre. When the collection was started, 4,600 homes utilized the service. A number of people retained the private collectors, who removed the wastes from the cellar. The present township collection is from the rear line of the house. The number of patrons has steadily increased until, at present, ashes and trash are being removed from over 8,000 homes, or 80 per cent of the total. We may anticipate continued increases, since in 1940 a total of 406 new homes were built in the township.

Regulations

Regulations governing the collections have been set up by the Board of Commissioners. These have been printed and distributed to all homes. They require that the waste materials be placed in containers near the rear line of the house but visible from the street. Containers may not be placed in the highway right-of-way except in the few sections where solid row houses exist. This eliminates the untidy appearance in a residential community where containers are scattered along the roadside for a day or more. Household waste materials must be separated into (1) ashes and (2) trash or other wastes, including shrubbery, trimmings, boxes, papers, cans, metal, crockery, bottles, etc. Garbage is not per-



mitted in either of these classifications, because it is collected separately. The ashes must be in metal containers with handles, of approximately one-bushel capacity. All other materials must be in closed containers of not over 4 bushels or be bundled together and securely tied.

Not more than 100 pounds of waste material will be collected at one time from any one household. This is to encourage the putting out of material regularly for collection and not allowing it to accumulate. An accumulation of wastes is a fire hazard and unsanitary. Large amounts put out occasionally also unduly delay the regular schedule of the collection forces.

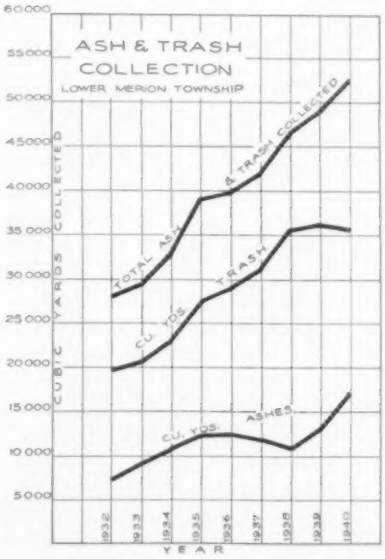
Waste materials from commercial establishments, such as stores, manufacturing plants, and hotels, are not collected by the township.

If for any reason the regulations are not complied with, such as the improper location or type of containers, a special "red tag" is attached to the containers, on which has been checked the infraction of the rules.

Collections are made once every two weeks between the hours of 7 A.M. and 4:30 P.M. When a collection day falls on Memorial Day, the Fourth of July, Labor Day, Thanksgiving, Christmas or New Year's Day, the collection is made on the following working day.

Organization

The township is divided into eight districts, one of which is served each collection day. In general, these coincide with the election districts or some physical boundary. They are balanced in size so that each would require about the same time to service. Collections are made on Tuesday, Wednesday, Thursday and Friday. In the past year a special weekly collection has been made each Saturday from the homes in the business districts of Bryn Mawr, Ardmore and Bala. This was instituted at the suggestion of the Fire Marshal as a safety measure. Thus in a two-week period the entire township is covered. Three trucks are used throughout the year on trash, and three additional trucks are used on ashes in the winter months. More recently in several



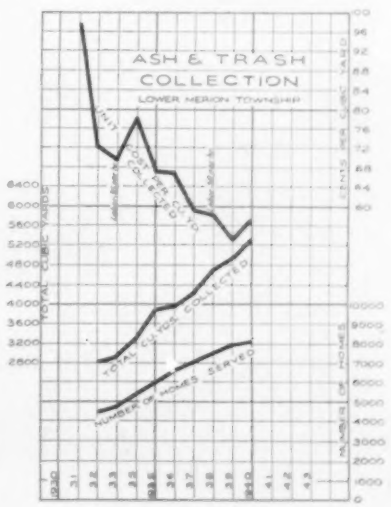
of the districts, which have grown the fastest, it is necessary to hire an additional truck and men in order to cover the area in one working day.

In general a district is divided into three routes, each of which is covered by a truck manned by a driver and three laborers. Both 2½- and 1½-ton trucks are used. The cost of operation has averaged 9 cents and 6 cents per mile respectively. They haul 4 cubic yards of ashes and 10 cubic yards of trash. Drivers are paid 55 cents per hour for 10 hours a day, and laborers 50 cents per hour for a 9-hour day. The men are supplied with uniforms, a gray coat and trousers, also rain-coats marked with L. M. Twp. and a number. Collections proceed in all kinds of weather except in very heavy storms, which are usually of short duration. This organization is under the direction of a foreman on the street. The Superintendent of Maintenance supervises the collection and disposal of waste materials as one of his duties.

In addition to the routine collection of ashes and trash, the organization is used to pick up piles of dirt or leaves gathered by the motor sweepers. On Mondays they handle road maintenance in a section of the township assigned to them. In emergencies they are called on to clean up storm debris or to spread cinders when roads are icy. All trucks are equipped with snow-plows. This year they were called into service, night and day, to plow and haul away the Friday snows of February 28 and March 7.

Quantities and Costs

Each truck driver keeps a card account of his mileage, gas and oil and the number of loads hauled. A careful record of collection data and costs has been compiled. The accompanying tables show that the volume collected has increased from 28,044 cubic yards in 1932 to 52,963 in 1940, or nearly double in 9 years. The average collected yearly from each home served is 2 cubic yards of ash and 4½ cubic yards of trash. On the basis of 1,000 pounds per cubic yard for ashes and 230 pounds per cubic yard for trash, this is about 1 ton of ashes and ½-ton of



trash. The cost of the collection is 57 cents per cubic yard, or $2.37 per ton. It costs but 15 cents for each house visit, or $3.80 per house per year. The per capita cost for the removal of ashes and trash for the year was 76 cents.

Disposal of Wastes

Trash is collected and hauled to the incinerator in the southeastern part of the township, an average distance of three miles. Ashes are collected separately, and a considerable portion is dumped at locations scattered throughout the township where fill is desired. The average haul of this material is but two miles.

A problem that increases in seriousness as a community develops is one of finding a place for the disposal of waste materials. While vacant areas remain, especially in a rolling topography, it is usually easy to find nearby locations for disposal of ashes for fill. Trash, however, presents a more serious problem, since it does not make a very desirable filling material.

Township Dump

Over twenty years ago, prior to the public collection of waste materials in Lower Merion Township, the Board of Commissioners wisely foresaw the need for a public dump, and in 1918 purchased a tract in the southeastern part of the township, containing 17.733 acres. It contained a deep ravine which provided an ideal place for dumping wastes. Some years later, in 1936, this was enlarged to 30.6 acres by the purchase of an adjoining property. For years this location has served as a dump for the most of the waste materials of the township. The privilege of dumping was extended to private trucks for 25 cents per load. Permission has also been obtained for using as a dumping place for ash, a quarry hole in the central and another in the upper part of the township.

The practice which was developed as the most satisfactory for the disposal of trash was to spread it over the top of the dump, and once or twice a week, when the materials were dry and the wind was in the right direction so that the smoke would not annoy nearby residents, the area was burned over. The residue was then pushed over the face of the dump. When material was not burned on the surface but dumped directly over the face, trouble was experienced from internal burning of the fill, with its resulting disagreeable odors.

ASH AND TRASH COLLECTION—1940

Month	Ash Cu. Yds.	Trash Cu. Yds.	Total Cu. Yds.	Cost
January	1,991	3,129	5,120	$2,9[illegible]45
February	2,056	2,472	4,528	2,9[illegible]62
March	2,072	2,862	4,934	2,9[illegible]99
April	1,808	3,042	4,850	2,5[illegible]10
May	1,432	3,146	4,578	2,5[illegible]63
June	856	3,289	4,145	2,1[illegible]85
July	716	2,905	3,621	2,0[illegible]72
August	640	2,714	3,354	2,028.49
September	872	2,621	3,493	1,823.91
October	1,412	3,529	4,941	2,660.92
November	1,548	3,169	4,717	2,935.62
December	1,733	2,949	4,682	2,747.60
Total cubic yards	17,136	35,827	52,963	$30,204.90
" tons*	8,568	4,136	12,704	

* Tonnage computed on basis of ash 1,000 pounds per cubic yard and trash 230 pounds per cubic yard obtained from weighings at the incinerator.

ASH AND TRASH COLLECTION—1931 TO 1940

Year	Total Cost	Cubic Yards	Cost per Cubic Yard
1931 (4 mos.)	$ 2,025.30	6,992	$ .99
1932	20,248.59	28,044	.72
1933	20,264.91	29,192	.69
1934	25,982.72	32,653	.79
1935	26,213.42	38,938	.67
1936	26,554.22	39,831	.67
1937	24,984.05	42,005	.59
1938	27,260.52	46,599	.58
1939	26,442.45	49,410	.53
1940	30,204.90	52,963	.57

Incinerator

In order to eliminate some complaints which were received, the Board of Commissioners investigated the possibilities of incineration. When it was decided to erect a plant on the township dump, a storm of protest arose from the surrounding community. Their claim was that it would make the property a permanent dumping ground and concentrate truck traffic in the vicinity. It was pointed out that the property had been used as a dump prior to the purchase of properties of many who complained and that space was available for many years dumping in the future. The question was decided in the courts in favor of the township.

In 1938-39 with the assistance of PWA funds an incinerator housed in a carefully designed brick structure was erected on a hillside on the township dump property at a cost

The Lower Merion Township Incinerator at the Right, and the New Police Pistol Range in the Foreground

of $105,000. The building was of sufficient size to house a furnace with a capacity of 150 tons in 24 hours. Since garbage was hauled away from the township and fed to hogs, only one-half the furnace units were installed. The furnace is a Pittsburgh-Des Moines type with superheater and an ornamental stack of 125 feet height, designed by Albright & Friel, consulting engineers, and erected by H. R. Dickens, contractor. For the last two years steps have been taken to gradually landscape and park the area so that it will soon be a real asset to the community. One of the finest police pistol ranges in the country has also been constructed on the property. The first match was held this fall.

Operation of Incinerator

The incinerator was put into service in June, 1939, and has been operated successfully since that time. The force consists of a superintendent and four stokers, whose time is staggered so that three are on duty during the middle and latter part of the day, and one is on the job until 10:00 P.M. to clear out the firebox and put the building in readiness for the next day's operation.

The township has granted to an individual the privilege of salvaging any material of value from the trash as it arrives at the incinerator, and he in turn agrees to load all trash into the furnaces. He has six to eight men at work sorting through the material on the loading floor. Paper, rags, bottles and metals are the principal material salvaged. As the data below indicate, 23.5 per cent of the trash received is salvaged and the remainder burned.

All material received at the plant is weighed, as is the salvage and residue. During the past year 5,987 tons were received, from which 1,401 tons were salvaged and a residue of 2,098 tons, principally cans, were removed from the furnaces and placed on the dump. We have now developed a screen to separate the cans from other ash residue, and are selling the cans. While this may not be especially lucrative, it will greatly reduce the volume placed on the dump and produce a better grade of fill. There is space on the property for filling for a number of years, but if the rate of filling can be reduced, there will be ample space in years to come when dumping areas will be even more limited than at present.

The total cost of operation in 1940, the first full year the plant was in service, was $11,004.77, or $1.84 per ton of trash received at the plant. The average cost during the first six months' operation was $1.94 per ton. The per capita cost of refuse disposal is $.27. This with the collection costs makes a total of $1.03 per capita.

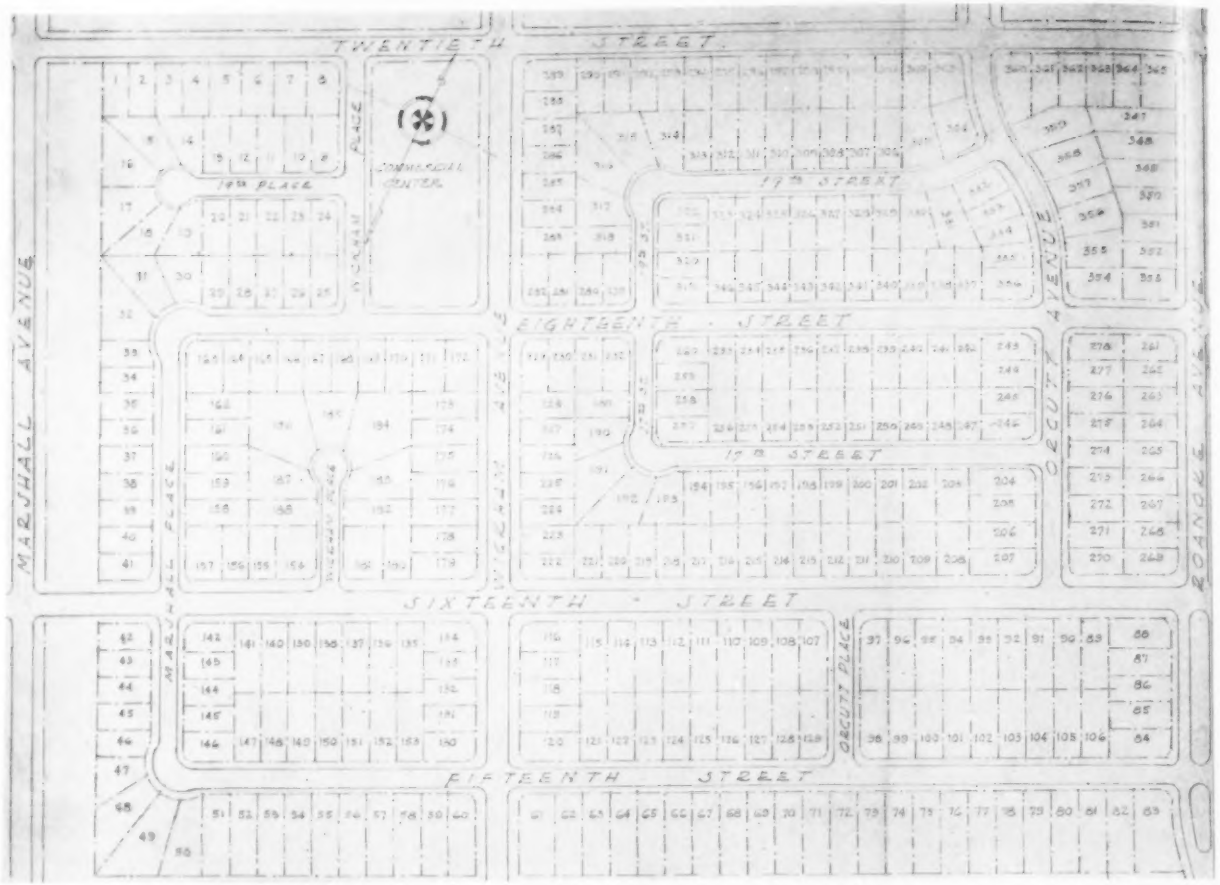
Arrangements have been made to receive waste materials from the borough of Narberth, a community of 1,500 homes, 5,000 people, covering one square mile, and entirely surrounded by the township. In 1940 it brought to the incinerator 776 tons, or 13 per cent of the total received. The borough pays for this service on the pro rata cost of $1.90 per ton. In addition, it pays $50 per year for the privilege of dumping ashes. Private loads from the township are received at the incinerator at a charge of 25 cents per load. The rate is low, to encourage private collection and frequent hauling of waste materials from the stores. Too high a rate would tend to encourage dumping of trash along roadsides or the accumulation of wastes on the properties, creating an unsanitary condition and a fire hazard. In 1940 there was collected $831.50 for the dumping privileges of 3,326 private loads.

Township Forces vs. Contract

The question is frequently raised as to the relative desirability of collection of wastes either by township forces or by contract. Much can be said on both sides, but the real answer depends on how the many factors involved are handled. Township forces if properly organized and supervised and not demoralized by political influence are definitely able to give better service than can be obtained with a contractor. They are more flexible and readily controlled. Grievances of citizens are more easily settled. Many border line cases arise and can be better handled with township forces, such as whether a collection has been actually missed, or the patron had neglected to put the material out in time, whether material is domestic or commercial waste, etc. The men and equipment are available for other services. They pick up papers and trash strewn along the street. In Lower Merion they are used to gather material collected by the motor sweepers, in emergencies to plow snow, spread cinders on icy roads, clean up debris at times of severe storms, and handle road maintenance on the off-day, which is Monday. They also collect cans of screenings, three times per week, from the four sewage-pumping stations. In summer months, when ashes fall off to practically zero, the equipment and men are transferred to road maintenance work, and minor highway improvements or weed cutting, which at that time are at their height. The additional representatives of the township on the street make it likely that the maintenance forces will be more quickly advised of needed road repairs. Frequently the foreman or men pass word to the Superintendent of Maintenance of holes developing in road surfaces. This would likely not happen if the collection was by contract. If complaints are a measure of the satisfaction of the service, there are a far larger number received on account of garbage collection difficulties, which is by contract, than for ash and trash collection, which is by township forces. It is true that garbage is naturally more likely to develop a limited number of calls.

The cost of operation is also a factor. With township forces, the contractor's profits are eliminated. Both methods can be abused, and costs can climb. A measure of success with township forces was obtained in 1938, when bids were taken for collection by contract. The result was one contractor bid within a few dollars of the township cost for the year previous, while another bid ran 50 per cent above the township costs. To the contractor's bid price would have to be added costs for inspectors and supervision. The contractor is more liable to slight the work than is a municipal superintendent.

(Continued on page 81)



SECTION A, Stuart Gardens Defense Homes Project, Newport News, Va.

Land-Planning Methods Compared

An Analysis of Two Types of Development on a Large-Scale Defense Housing Site

By EUGENE H. KLABER
Director of Architecture for Rental Housing, Federal Housing Administration

ONLY rarely do we find in a single building-development an opportunity to compare on an equitable basis the costs of land development of subdivision into lots for individual homes and of large-scale planning of grouped houses. The Stuart Gardens project of the Defense Homes Corporation at Newport News, Va., presents such an opportunity.

The project was initiated to provide homes for workers in the defense industries centered around Hampton Roads. It was decided to build about 1,000 dwelling units, half of which were to be free-standing and half attached in groups. As built, one section of the development contains 478 single-family detached houses, and the other 501 one- and two-story row-house units in group buildings. In both cases, the accommodations had similar room sizes and equipment.

Both sections represent a low density of development — seven families per net acre for the individual homes and ten families per net acre for the group houses. In both sections, the land planning was done with skill and with an eye for economy. In fact, it may fairly be said that each section is good of its kind and well above the average of land-planning practice.

A glance at the plan will show at once the advantages and disadvantages of each type of development. The individual home layout offers the occupant the satisfaction of having his own parcel of ground and immediate access to a highway. There is no physical intrusion of one family on the domain of the next. The dweller in the group units, on the other hand, enjoys a greater degree of privacy from visual intrusion, for the spacing between building groups is more generous and, by the same token, the outlook from the individual dwelling more extended and agreeable.

As each mode of dwelling involves some compromises, it is a matter of taste which of the two an individual may prefer. It should be noted, however, that the single-family home scheme involves considerable added costs of site development; witness the analytical tabulations on the next page.

Both sections of the project will presumably be occupied by families of one general income level—that is to say, families with about the same capacity to pay taxes and charges; but in the case of the single-family homes, the city must furnish and each family must pay additional for the cost and maintenance of 1,779 sq. ft. of land; 97 sq. yds. of street paving, 55.7 lin. ft. of public sidewalk, and 1.4 street trees (spaced at 40 ft.).

Here is a problem for cities to ponder. In neighborhoods devel-

Above—SECTION B; Below, SECTION C

PLANS BY WILLIAM N. DENTON, JR.

SECTION C and Key Map of the Stuart Gardens Project

BASES OF COMPARISON	DETACHED HOUSES (478 Dwelling Units)	GROUP HOUSES (501 Dwelling Units)
Gross area of tract, including play and parking areas for group houses; excluding commercial school and church sites; including half of boundary streets for both	94.5 acres 8,628 sq. ft. per family	56.25 acres 4,894 sq. ft. per family
Area in streets	25.6 acres 27% gross area 2,334 sq. ft. per family	6.4 acres 11.4% gross area 555 sq. ft. per family
Area of pavement (including parking areas for group houses)	606,600 sq. ft. 1,269 sq. ft. per family	201,900 sq. ft. 403 sq. ft. per family
Public sidewalks	34,063 lin. ft. 71.3 lin ft. per family	7,845 lin. ft. 15.6 lin. ft. per family
Private walks to front and rear entrance	Approximately 110 lin. ft. per family	Approximately 80 lin. ft. per family
Parking area	None	1.45 acres
Play areas for small children	None	4
Average cost of utilities (estimated)—roads, curbs, sewer, water, gas, electric	$318 per family	$170 per family

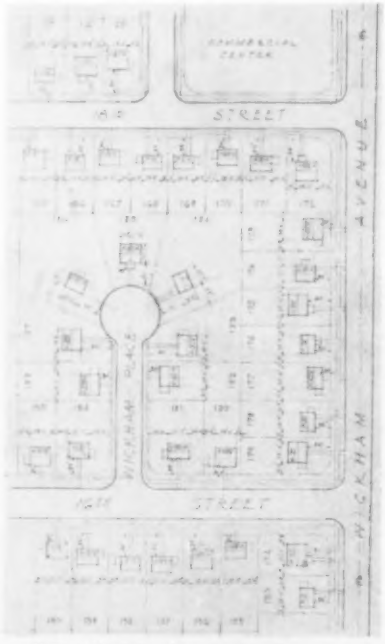
oped for comparatively expensive homes, a few hundred additional dollars per dwelling spent for public improvements may not be prohibitive, at least while the neighborhood is new. The city may well hope to collect taxes to defray the added expense of the improvements and their maintenance. The income of the inhabitants is sufficient so that they can afford to pay the cost, and this is the principal factor in the successful collection of taxes. A tax levy beyond the ability to pay cannot be collected.

When the attempt is made to accommodate families of low income (and that means most families), added costs of public improvement assume a major importance.

Does this mean that projects comprising detached single-family homes are to be avoided? Not at all. To assume this would be unrealistic. A majority of urban families in the United States live in individual homes, and even more prefer to live that way. Hence, this is a problem to be solved and not sidestepped.

Therefore, methods must be found to reduce the cost of public improvements immediately attributable to low-cost and low-rent housing. The methods used in large-scale rental projects which develop property in depth as well as along street frontage must be applied. To do this, we must discard the idea that every lot must face on a public highway. This idea is firmly rooted in traditional subdivision practice. Municipalities, mortgagees, and home owners cling to it tenaciously. The subdivision developer merely follows the indicated pattern.

The community does this because of the greater ease of rendering certain services such as waste collection, police and fire protection. Doubtless the habit of assessing land on a front-foot basis plays an important part in the attitude of municipal officials. It is much more difficult to appraise a tract with interior properties having access to the street over easements. But the difficulty is not insuperable. It can be done. If land were subdivided by the method here recommended, the interior parcels would be the logical location for the lowest-cost dwellings, leaving the street-front properties for slightly more expensive homes. This does not mean alley dwellings, but study, skill, and artistry in land-planning practice.



A Detail of Section A *(See Page 44)*
Showing Location of Detached Houses

Mortgagees may be loath to accept this new concept. In lending, they naturally tend to seek the most desirable properties on which to make their comparatively limited number of loans. This would be all very well if the majority of borrowers could afford expensive lots. But they cannot, and it must be obvious that, for low-cost housing, a smaller loan on a cheap lot is better security than a larger loan on expensive land, which merely means that the mortgagor of limited income is more likely to default on his obligation. The borrower's ability to pay is the nub of the matter.

Home-owner resistance is likely to arise from worn-out prejudices and hopes—the idea that living "in the rear" is socially undesirable; that the front of the house must look well, but that the rear may be neglected. The hope of increment in land value has been so persistently sold to home owners that it dies a slow death. Perhaps the lightning will strike and Grandview Avenue will become an important commercial street. But how often does it happen that way?

The sole hope of solving this knotty problem lies in the development of new techniques of land planning and new methods of protective controls, so that what we do today is not ruined tomorrow. A start has been made toward the solution of many of them, but the limitations of this article do not permit an adequate presentation.*

* EDITORIAL NOTE.—See, however, "Site Planning for Livability," by Elbert Peets, THE AMERICAN CITY, October, 1941, page 35; also "In Solving Street and Utility Problems Cities Get Aid from FHA," by Seward H. Mott, in the current issue, page ——.

Important Articles

on legal problems of municipalities resulting from the National Defense Program in recent issues of THE AMERICAN CITY:

Duty of Army Convoy to Obey Traffic Signals (July, page 105)

Right of City Officials to Retain City Jobs While Serving in Federal Military Forces (August, page 107)

Applicability of Municipal Building and Other Regulations to Defense Housing Projects (September, page 115)

Liability of Cities for Injuries to Volunteers in Training Programs (November, page 109)

Blackouts—Liability of City for Accidents Caused by Such Lighting Restrictions (December, page 101)

Street-Paving Program in Elmira, N. Y.

Four-Year Program of Rehabilitation of City's Streets Has Covered Business and Residential Sections

ELMIRA has a population of 50,000 and is essentially an industrial city, having such nationally known industries as American - LaFrance - Foamite Corporation, Kennedy Valve Mfg. Co., Eclipse Machine Co., American Bridge Co., and others, the products of which find their way to all corners of the globe. The industrial slump of 1929 and following years was felt deeply in Elmira, which made prompt use of a work relief program with Federal assistance to provide employment for its citizens and at the same time to create useful lasting services through these projects. In 1936, an extensive street - paving program was started, and as late as 1940 eight or nine projects, mostly paving, were in continuous operation. At present, because of the distinct uplift in industrial activity caused by national defense and other war industry activities, it is very difficult to get enough able-bodied men to run even two small projects.

East Abutment of the Newtown Creek Bridge, Showing Grouted Riprap and Calco Gate on Storm-Water Drain

East Church Street Project

This improvement of a residential street included the construction of a through girder bridge of 90-foot span with I-beam stringers, and a 38-foot roadway of Irving subway decking over Newtown Creek. The approaches to the bridge were extended 320 feet at one end and 700 feet on the other. The approach walls for the bridge are extended 60 feet either side of the bridge, because of the plans of the U. S. Engineer Department for a future levee on either side of Newtown Creek. These approach walls have a pipe rail which is extended across the bridge, with additional protection afforded by ¾-inch square bars in panels, set inside the pipe rail. The bridge proper was erected by the Elmira plant of the American Bridge Co.

Heavy grouted riprap, placed by shovel, was used both upstream and downstream of the two bridge abutments. Through this riprap, one 10-inch storm sewer and one 24-inch storm sewer empty into the stream with Calco floodgates installed to prevent the creek from backing up into the sewer during high water. The riprap for this work was saved from the abutments of the old Madison Avenue bridge, which was replaced two years ago as a PWA project.

As a part of this improvement, new concrete curb was installed on both sides of the street on both approaches to the bridge. The curb is 6 inches wide at the top, 9 inches wide at the bottom, and 18 inches deep, with suitable reduction for access drives for existing buildings as well as at vacant lots. Hotchkiss metal curb forms were used by the relief labor. A two-bag CMC mixer was used for the concrete being fed by wheelbarrows. Only one bag of cement is used per batch for the concrete curb, and two bags for the

Preparatory to paving East Church Street, new concrete curb and catch-basins were installed

Grading with an Austin-Western Badger Shovel on East Water Street, Elmira, Preparatory to Repaving During Summer of 1941

concrete base for the new pavement.

The old pavement on this street was brick, 17 feet wide, with 6-inch concrete edging on each side. These bricks were entirely removed, as was the edging, and the roadway widened to 38 feet between the faces of the curbs. The street is being paved full width, with a 6-inch concrete base and a 2½-inch stone-filled sheet pavement, furnished by the General Stone Co., of Elmira, and laid with a rented Barber-Greene tamping-spreader-finisher.

Also included in the work were the removal of six poplar trees from 2 feet to 6 feet in diameter on the west bridge approach, and the construction of six new brick catch-basins with 24-inch square gratings with 43 per cent openings.

The bridge approaches are being paved with a 4-inch penetration macadam base and a 2½-inch black-top over the heavy fill, but the concrete curb and sidewalk, which is to extend the full length of the project, 5 feet wide and 6 inches deep, will be built on these approaches. On the East Church Street project, Arthur Kendall was foreman for the city, and Clayton Heller was foreman for WPA.

Sullivan Street Project

On Sullivan Street a single line of car track was removed, with the ties and ballast. The rail was jacked out and then cut into short lengths for easy handling with an acetylene torch. This area was then paved with 6 inches of crushed stone penetrated with 68 penetration cutback and surfaced with 2½ inches of bituminous concrete.

In all, about 6 miles of track have been removed in Elmira, and in some cases a concrete base has been used and then the entire street resurfaced after the rail was removed.

East Water Street Project

East Water Street in Elmira is a main thoroughfare through the center of the business district. It had a Warrenite top on a 6-inch concrete base, and double street-car track. All the paving was removed, using a pair of Ingersoll-Rand trailer compressors for operating the pavement breakers, and then the street was repaved 42.6 feet wide between new concrete curbs laid with Hotchkiss curb forms. The material immediately beneath the curb was hand-tamped 4 inches thick to insure a suitable foundation.

In this section it was necessary to remove several large trees which were in none too healthy condition, and about 260 feet of the street was widened to give a uniform traffic artery. The whole job was 850 feet long.

The street was rebuilt with an 8-inch reinforced concrete pavement, the concrete being mixed in a 4-bag Jaeger mixer and hand-screeded and hand-finished. Local sand was used for the bottom 6 inches of the pavement, and sand imported from about 200 miles distant was used for the 2 inches of the top to secure a denser concrete. Natural and portland cement were used.

The property owners in this block are rebuilding the sidewalks from end to end by contract; and the city, under contract with the local electric utility, is installing boulevard lights.

Miscellaneous Work

In some instances the street-car tracks, instead of being removed, have been covered with Tarvia and ⅜- to ¾-inch stone. This has been used as a temporary expedient and has been very satisfactory for periods of two years and slightly more, but it is planned to remove all street-car tracks eventually.

Over 680 curb returns have been removed and new concrete curb and gutter installed with a 15-foot radius, mostly on unpaved roads or those surface-treated roads referred to locally as paved with "superficial macadam."

Whenever a paving project is started in Elmira the city requires that all utility services, water, sewer and underground electric services,

(*Concluded on page 81*)

Looking North on Lake Street, Elmira, from East Water Street, Showing the Concrete Paving Completed in 1940 and the Installation of New Street Lights

$12.50 Per Capita Profit Paid by Municipal Electric System

By Ernest A. Anders
Chairman Public Utilities
Jacksonville, Fla.

JACKSONVILLE'S municipal electric light plant, with a current investment value of approximately $15,000,000, and an annual new earning capacity of more than $2,500,000, is considered one of the finest and most efficiently operated municipal plants in the United States.

The municipal plant, which serves 200,000 persons through approximately 48,000 service connections over 900 square miles of territory, has a generating capacity of 91,000 kw, distributed over a newly improved and extended transmission system. During 1940, 3,409 new service connections were installed over the system, for an all-time record.

The local plant is considered the third largest municipal system in the United States, in point of customers served, and is the largest in point of area covered by its distribution system. Another record held by the local plant is the total years of service of its employees. Even before the inauguration of civil service here, there was an exceptionally small turn-over in electric plant personnel, and the combined experience of its employees exceeds that of any similar group anywhere in the United States.

Because of Jacksonville's income-producing utilities, and particularly the electric light plant, Jacksonville's taxes have been held to reasonable levels even during the last few years of unusual growth and development. The flow of funds into the municipal treasury, from the utilities, has enabled Jacksonville to maintain its record of being the only city of 25,000 population or larger in the nation which does not levy any tax on homesteads of $5,000 valuation or under.

Jacksonville's mushroom growth during the past four years has of course made severe demands upon the capacity of the municipal light plant, necessitating a $5,210,000 program of extensions and improvements both to the production and distribution systems. If the expansion program had not been undertaken when it was, and completed promptly, about half of the city of Jacksonville would be without lights today.

In generation it includes a new 42,000-kva turbine, the construction of six new sub-stations, and the doubling of capacity of three sub-stations previously in operation. Four turbines are now in operation at the main generating station—42,000-kva, 10,000-kw, 12,500-kw, and 25,000-kw turbines.

Distribution System

The improvement, maintenance, and extension of the overhead and underground distribution system for the municipal electric light department is a major municipal activity in itself, and for administrative and bookkeeping purposes is considered a separate department. Operating expenses of this department, in 1940, were approximately $455,000.

The distribution capacity of the downtown underground distribution system was greatly increased by building or remodeling 29 underground network vaults, and laying scores of miles of new cable.

The improvement program increases the capacity of the primary distribution feeders over the entire area served by the utility, resulting in improved voltage regulation.

The improvement program included the installation of the latest type lighting (white-way) on Jacksonville's major arterial highways. These white-way systems were installed on Main Street, the Phillips Highway, Ortega Boulevard, Herschell Street, and Park Street.

There has been a general extension of rural lines and the erection of three new rack-type sub-stations.

It should be mentioned, in connection with this improvement and extension program as a whole, that it also included the installation of facilities for servicing the Navy Air Station at Black and Piney Point, the construction of a feeder line to Green Cove Springs (from which point city construction crews extended the services to an auxiliary Navy air field near that town), and the building of a new line to the beach, which will be available for servicing a proposed Navy turning basin at Mayport.

In maintaining the distribution system, the department utilizes seven completely equipped line trucks, five emergency cars, and crews, and two emergency cars and crews to patrol the overhead lighting system.

During 1940, the activities of the electric distribution department crews included setting 2,662 poles; stringing a total of 460.5 miles of overhead wire; and installing 31,910 feet of guy wire. City crews installed 111 250-candlepower lights in the overhead lighting system.

The transformer room crew made up 600 tap indicators, 443 tap indicators for new transformers, repaired 483 transformers, rewound 33 transformers, junked 17 obsolete transformers, hung 432 transformers, made up eight new mandrels for winding new transformers, disassembled 200 secondary buses, repaired 5 electric motors, rewound 3 motors, rewound 3 transformers, and filtered 1,100 gallons of transformer oil.

Underground system crews, during the year, used 200,000 feet of cable in maintenance, repairs to street lights, extension of service, and in connecting ranges and water-heaters. These crews also installed 176 outside meter text boxes during the year.

An important feature of the department's work is done by crews specializing in the installation and repair of electric ranges and water heaters. During 1940, 2,581 new ranges and 1,037 water heaters were installed. The 158 permanent employees now on the distribution department's rolls is slightly in excess of the average employed during the last several years, owing to expansion of the system and the necessity of completing connections of services to the new transmission system, while at the same time maintaining the routine operations of the department.

The Electric Light Department maintains a New Business Division, which is continuously encouraging greater use of electric current. This division makes surveys for store lighting, furnishes estimates of costs and savings involved in switching to electrical power from other forms, and gives potential customers any assistance they require. The department also carries on an intensive advertising campaign in local newspapers and other mediums.

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Passaic Insures Recoverable Loss

By THOMAS J. KENNEDY
Mayor, Passaic, N. J.

THE two facts, that I am a lawyer, and that as mayor my particular province is the Department of Public Affairs, combined (1) to give me some knowledge of insurance and (2) brought to my attention the fire insurance situation with respect to the properties owned by the city of Passaic. It seemed evident that there was sufficient over-insurance to warrant an appraisal and a new deal.

Our fireproof incinerator, for instance, having a replacement value of $300,000. was insured for $200,000. The only possibility of fire damage is from combustible refuse which is sorted and stored, before burning, in the upper story. We have reduced the coverage to $20,000, and the premium for five years from $1,120 to $448. We shall probably use $430 of this saving to purchase $67,000 worth of explosion insurance.

This was the most flagrant case of over-insurance plus the wrong type of insurance; but I knew that premium economies were possible along the entire line of our buildings. The situation was of course a local development, as no insurance company wants a client to over-insure. Our problem was simplified to some extent by the fact that the city carries a blanket policy through our local agent, who distributes the amount in accordance with the city's instructions. I informed the agent that I wanted the amount of insurance on each building to be the amount of money which the fire insurance companies would pay in the event of a total loss, and no more. He called in company engineers, who audited our entire program, with results indicated by the accompanying tabulation of present and proposed figures for the principal city buildings:

AMOUNTS OF FIRE INSURANCE AND THE PREMIUMS ON PASSAIC'S CITY-OWNED PROPERTIES BEFORE AND AFTER SURVEYING

	Insured for		5 Years Premium		% of Savings in Premium
	Old	New			
Almshouse	$42,800	$20,750	$672	$160	76
Garage	2,800	1,600	.....	.....	..
City Hall (over 50 years old)	89,600	76,000	401	340	15
City lodges	4,960	4,500	24	22	8
City storehouse	400	275	.....	.....	..
Engine houses					
No. 2	41,600	31,500	394	298	27
" 3	24,800	18,000	528	384	27
" 4	12,800	12,000	112	105	6
" 5	15,600	13,500	132	115	13
" 6	20,400	14,500	168	120	29
Incinerator	200,000	20,000	1,120	448	60
Municipal Building	80,000	77,000	855	823	4
Police Building	176,800	150,000	657	560	15
Park Shelter (1st Ward)	4,000	3,400	72	56	22
" " 2	6,240	5,400	56	41	27
" " 3	560	1,000	.....	.....	..
" " 3	320	500	.....	.....	..
Garage	39,800	36,000	2,050	1,853	10
Dog Pound	5,000	1,850	51	31	39
Garage	5,000	4,500	.....	.....	..
Children's Bureau	20,000	13,500	57	38	33
Engineering Office	20,000	9,500	160	75	63
Fire drill tower	9,500	5,000	142	74	48

While the individual premiums are not large, they were not small enough, and the reductions achieved ranged from 6 to 76 per cent, average about 25 per cent, and in money total some $1,800 for the five-year period. Clearly, the principal achievement is a *logical* fire-insurance program. Incidentally, we also saved $500 to $600 a year by reducing our automobile liability from $200,000-$300,000 to $10,000-$20,000, and the property damage from $10,000-$20,000 to $5,000-$10,000.

Federal Aid Urged for Planning Post-War Projects

AUTHORITIES agree that total employment is the major target for the post-war era and that building (in its broadest meaning) is the No. 1 industry to meet that need. Having already see the results of being unprepared for defense, there is no excuse for being unprepared for peace. There can be no adequate preparation for post-war building unless the Federal Government will set community and regional fact-finding surveys in motion now.

This is a major undertaking, months of intensive work are involved, and it is an inescapable prelude to advance planning. Whatever the cost, it will have to be spent sometime. If the surveys are not made now, much of the expense will be wasted later and the program will collapse. If the surveys are made now, the entire program can proceed on an orderly and organized basis.

The second stage of this program, but one which can only follow the first, involves advance project design to develop a "shelf" of carefully studied and useful post-war projects. It is reasonable to suggest that this program could now usefully employ five thousand men on work that will maintain civilian morale during the emergency. And it will pay huge dividends later in making it possible to go into action promptly and scientifically the moment the last bugle has sounded.

—From *The Architectural Forum* for November, 1941.

New Sewerage System and Primary Treatment Plant

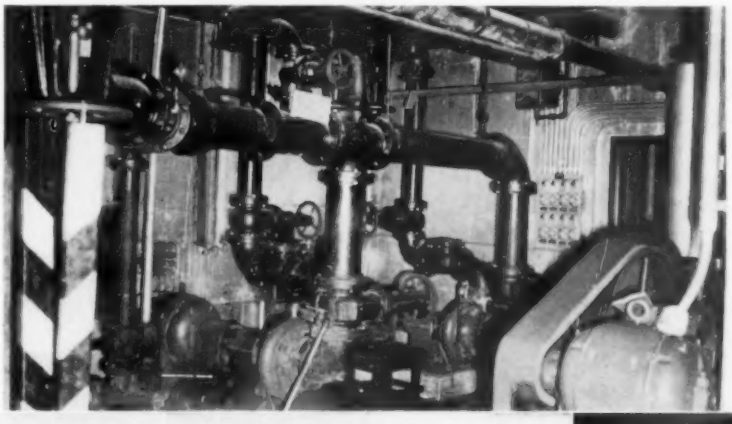
Duluth, Minn., Requires Fourteen Lift Stations to Pump Sewage to Main Interceptor Tunnel and New Treatment Plant

(Continued from November issue)

Sludge Digestion

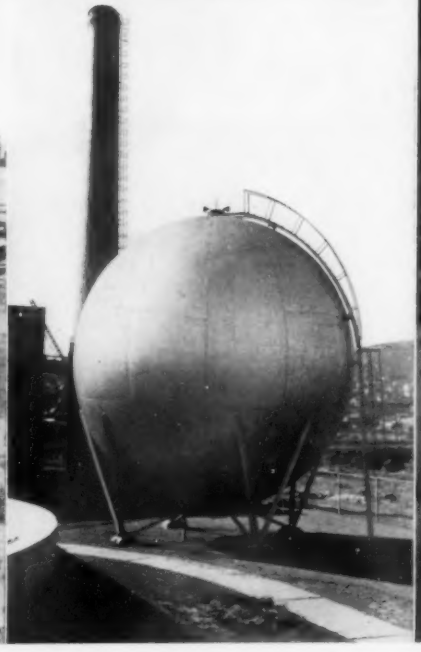
The sludge from the clarifiers flows to a central well, from which it is pumped by one of the three sludge pumps in the adjacent sludge-disposal building to one of the three digesters. The new plant makes use of the small clarifier and the 40 x 40-foot Dorr digester which composed the old plant, and to this has been added two 80-foot-diameter digesters with Pacific Flush Tank floating covers. Two Peerless Heater Co. gas boilers which were used in the old plant are now used for heating the water sent to the digesters in summer, while a new 120-hp International Boiler Works Co. water tube boiler, gas-fired, carries the heating load for the entire building and the digesters in winter.

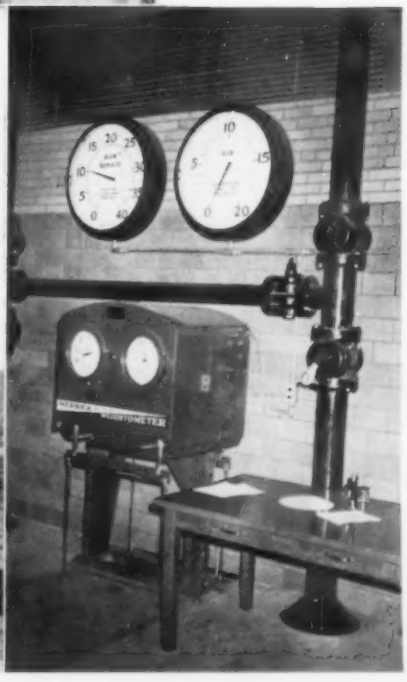
The digester temperature is maintained at 96 degrees Fahrenheit, and is carefully controlled by varying the rate of flow of the water to the digesters. Each digester has a header with five leads, each valved,



At right—The two Yeomans sludge pumps and at their right the Yeomans vacuum pump for the Eimco sludge filter. Below, left—The PFT waste gas burners

Below, center—The Duluth version of the Trylon and Perisphere is the stack from the sludge-disposal building and the Horton-sphere for the digester gas. Below, right—The raw sewage and air dials and the Merrick Weightometer for sludge weighing





The Sludge-Conditioning Equipment and Eimco Vacuum Filters

to five separate heating coils of 5-inch-diameter chrome-nickel-iron pipe. Each exit line from these loops or coils has a thermometer to indicate the water temperature and also a Powers regulator complete with a recording thermometer for the sludge temperature. This regulator operates a Fisher & Porter Rotometer which controls the rate of flow of the water through the coils, thus regulating the temperature of the sludge, as the water enters at a nearly constant temperature. In the digester valve chamber where these controls are located, there are sample points at three heights for determining the character of the sludge. An American gas meter made by the Pacific Flush Tank Co. measures the volume of gas from the two large digesters, and a separate meter of the same make is installed in the boiler room measuring the gas from the old digester. The average production of gas by the digesters is 120,000 cubic feet daily.

Sludge-Disposal Building

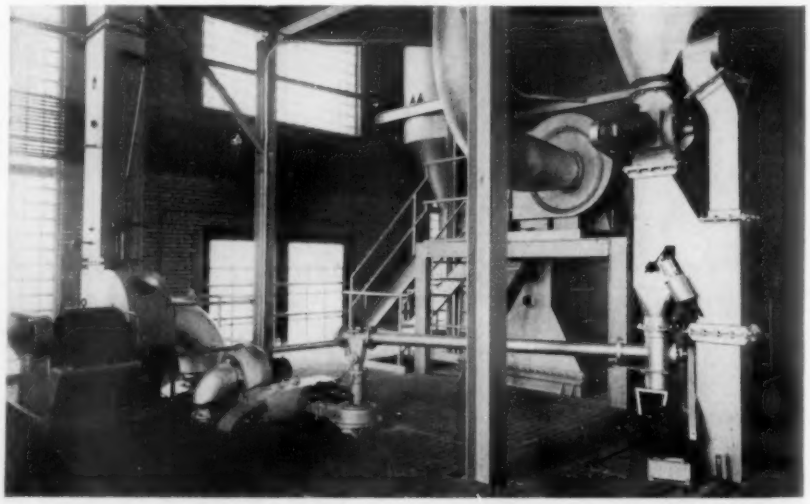
The sludge-disposal building just east of the main building contains considerable mechanism for the operation of the plant in the basement, the sludge-dewatering equipment and incinerator on the ground floor, and on the next floor the chemical storage. In the basement of the sludge-disposal building are two sludge wells to which the digested sludge flows by gravity after it has been started by the sludge pumps. The sludge-pump installation consists of one small Barnes pump which was in the original installation, and two new Yeomans sludge pumps which move the sludge from the clarifiers to the digesters. Adjacent to the sludge pumps in the basement are two Chicago Pneumatic vacuum pumps used for the operation of the Eimco sludge filters, two Oliver pumps to handle the filtrate from the Eimco filters, and a shop for the general maintenance operations required at the plant.

The gas compressor room, leading off the main basement, contains two Yeomans gas compressors, and two American gas meters, one of which measures the volume of gas compressed and the other the volume used in the plant.

The low-pressure gas main, which collects all gases from the three digesters, is tapped as required for the use of gas in the laboratory, boilers, the separately fired unit heaters, and other services; and each separate service is equipped with a Dorr flame trap. On this main is a gas surge tank 7 feet in diameter by 10 feet long on which the pressure is the same as on the low-pressure system, about 3 inches of water.

Two Yeomans gas compressors driven by Westinghouse motors draw gas from the surge tank and deliver it at 30 pounds pressure to the 35-foot-diameter Hortonsphere outside the building, which stores about 1,000,000 cubic feet of gas at this pressure. If the demands for low-pressure gas are not satisfied during the operation of the compressors, gas enters the low-pressure line through a reducing valve from the Hortonsphere until the required 3 inches of pressure is met. All gas lines are equipped with Walworth plug-valves.

The blower room, also leading off the main basement, contains two Connersville positive blowers driven by Westinghouse motors and equipped with Burgess Battery Co. mufflers on the intake and a Marsh pressure indicating gage and a recording gage on the discharge. All air drawn in by these blowers for delivery to the grease flotation tanks is passed through wet and dry filters and a hot-water coil which insures a uniform air temperature of 90 degrees Fahrenheit. In this same room are two Yeomans high-pressure compressors operating at 20 pounds pressure, for blowing the sludge blanket from the Eimco vacuum filters.



The Induced Draft Fan, Dried Sludge Air Lock and Sludge Storage of the Raymond Flash Drying Installation at the Duluth Sewage Works

Chemical Storage

Three 10,000-gallon rubber-lined ferric chloride tanks are installed on the third floor of the building. These have the standard Goodyear rubber lining to protect the metal from attack by corrosive chemicals. Ferric chloride is purchased as a 40 to 45 per cent solution and is delivered in tank railway cars at ground level, which are unloaded by compressed air and flow to a small pump located in an extension of the digester tunnel, which pumps the chemical to the third floor into the storage tanks. Lime in standard paper bags is delivered at the same entrance down a chute, is stacked on hand trucks, and pushed to the freight elevator, which raises it to the third floor. The lime is stored on a large wooden platform adjacent to a hopper into which the bags are emptied for delivery to the dry feeder for sludge conditioning.

The Filter Room

The filter room on the ground floor contains two Eimco vacuum sludge filters, with the conditioning equipment, and sufficient space for the installation of two additional filters. In this same room is the Builders-Providence control for the ratio of air recirculated in the Connersville positive blowers in the basement, because they have a constant capacity, and the requirements of the sewage call for varying the volume of air in accordance with the volume of flow of the sewage.

The sludge-conditioning equipment consists of two mixing tanks to which a pair of Eimco bucket elevators deliver digested sludge from the sludge wells in the basement. These bucket elevators are driven by Westinghouse motors through Reeves variable-speed drives.

On a platform built on top of the mixing tanks are located the Omega ferric chloride proportioning devices, and the Omega dry feed machine for the lime. The lime is proportioned by beam scales which weigh the delivery of the lime from the hopper.

The chemically-conditioned sludge with a pH of 3.2 flows by gravity from the conditioning tanks to the filter tank beneath the Eimco vacuum filters. The two Eimco filters are 8 feet in diameter and 10 feet long, containing 250 square feet of filtering surface each. They both rotate inward so as to deliver the dewatered sludge to the variable speed belt which carries it over the Merrick Weightometer on its way to the Raymond flash drying system for disposal. The vacuum filters receive a sludge of 92 to 97 per cent water content and reduce it to 67 per cent.

ANALYTICAL DATA ON SEWAGE PLANT OPERATION
DULUTH, MINNESOTA—1941
MONTHLY AVERAGES

	April	May	June
General Information			
Mean temperature—F	44	52.7	60.0
Total precipitation for month	2.74	2.67	3.67
M. G. D.	12.3	12.6	12.56
Av. pH	7.35	7.35	7.38
RAW SEWAGE			
Temperature of sewage °F	50.5	53.9	55
B.O.D. ppm	109.9	201.2	210.8
Oxygen required—pounds	11,052	19,517	11,592
Equivalent population	68,886	121,980	72,450
Solids			
Total solids ppm	388	451	479
Suspended solids ppm	115.4	146	140
Settleable solids ppm	67.3	95.2	92.2
Grit removed—cubic feet	1.9	7.0	8.0
Screenings removed—cubic feet	47.9	44.2	20.5
Pre-Flocculator Solids			
Suspended ppm	121.2	154	136.5
Settleable ppm	92.2	105	95.4
Post-Flocculator Solids			
Suspended ppm	119.5	157	145
Settleable ppm	87.2	107	99.8
Effluent of Clarifier No. 1			
Suspended solids ppm	69	74.8	66
Settleable solids ppm	25	15.4	17.6
Effluent of Clarifier No. 2			
Suspended solids ppm	70	73.9	65
Settleable solids ppm	23	11.9	14.9
Effluent of Clarifier No. 3			
Suspended solids ppm	69	72.5	66.7
Settleable solids ppm	19.8	12.2	16.9
FINAL EFFLUENT			
B.O.D. ppm	73	115.3	75.8
Oxygen required pounds	7,278	11,743	7,930
Equivalent population	45,539	73,390	49,562
B.O.D. % reduction	34%	40%	64.2%
Solids			
Total ppm	354	378	415
Suspended ppm	69	65	56
Settleable ppm	23	13.4	15.2
Total ppm removed	39	73.2	65.4
Solids Removed—percentage			
Total %	10.9%	14.3%	12.3%
Suspended %	37.8%	51.2%	54.5%
Settleable %	69.6%	83.0%	79.7%
Total pounds per day—average	4,753	12,970	6,842

Sludge Drying and Incineration

The wet filter cake conveyor delivers the Eimco cake to the mixer of the Raymond flash dryer system where from 2 to 10 parts of dried sludge from the drying system cyclone are added for each part of wet cake. This greatly reduces the moisture content of the wet sludge; and at the end of the mixer the combined material drops into the flash dryer, where the fins of the rotor at high speed mix and pulverize the material completely. The flash dryer fan blows the dried sludge to the top of the drying system cyclone, which has a relief valve and is also equipped with a vapor fan for pulling the moisture out at the top and delivering dried material to the top of the furnace.

The dried sludge collected in the cyclone is passed through an air lock to the dry divider, which proportions the amount that is delivered back to the mixer for drying and the portion which goes to the other chute. This second chute is again divided, delivering a portion of the dried sludge to the fertilizer cyclone, beneath which is a storage bin and sacking spout. The

(Continued on page 81)

Metal-Clad Switchgear for City Electric Plants

Metal-Clad Switchgear in Oconomowoc, Wis., Municipal Electric Plant

ALL electrical power goes through switchgear. It is the vital control of generation and distribution, and any failure in it will interrupt service. Modern designs seek to eliminate the hazards in earlier types of construction by completely enclosing in metal compartments all the major parts. In "metal-clad" switchgear, the circuit breakers are all easily removed for inspection and replacement.

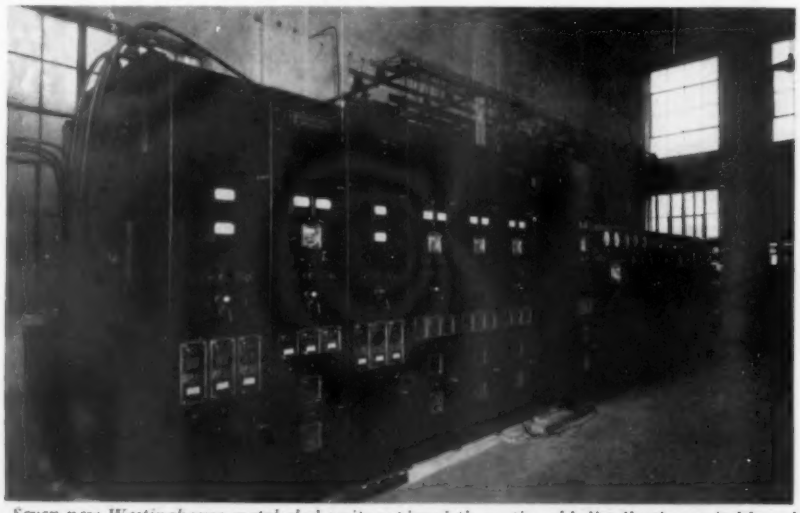
The principle that has made metal-clad switchgear accepted modern practice is that the devices and connections which operate the generating and station equipment and the outgoing feeders are integral, a system, an entity. The circuit breakers, transformers, insulated buses, and connections not only are installed in separate compartments but were *designed* to work together in simple, smooth, continuous service. No live parts are exposed, while direct-acting mechanical interlocks assure the safety of plant personnel and equipment.

All this would be taken for granted, and no article about metal-clad switchgear would be needed, except for the fact that the larger proportion of the older municipal generating stations have not yet installed this essential equipment. As *was* the case in the private power field, a number of municipal-plant officials hold that enclosed factory-assembled switchgear is not essential, even that it is newfangled and a needless expense. This is understandable. Engineers, technical men, professional men are innately conservative. Their work and responsibility require this quality. They have learned, or they feel instinctively, that the new is frequently experimental, and that experiments may turn out either way. Most of them concede, however, that metal-clad switchgear is better equipment assembled by the best methods. What then are the reasons why it has not been universally installed?

1. The old switchboards work.
2. They grew up with the plant.
3. They have been in a long time.
4. The operators are used to them.
5. Personal accidents are rare.
6. Service is seldom interrupted.
7. They look good enough.
8. The reduction in station cost is invisible, whereas the cost of the new gear is immediately real.
9. The inertia imposed by habit.

None of these reasons, it is seen, is conclusive. All are negative reasons. In the private branch of the industry, reasons of this kind did not stand up long against the knowledge, experience, and responsibility of the executive engineers of the utility company or system. Indeed, it is seen from the above random objections that the decision to rip out existing open-type switchgear and replace it with factory-built enclosed switchgear is not wholly within the province of the plant superintendent nor even of the municipal electric utility commission, both of whom have a natural ambition to show a surplus, next year and the year after, as large as, or larger than, that of the preceding year.

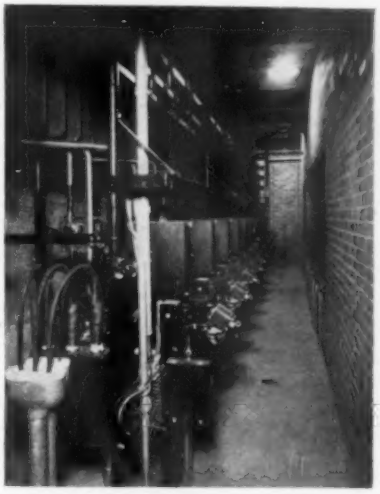
Quite likely, all other consider-



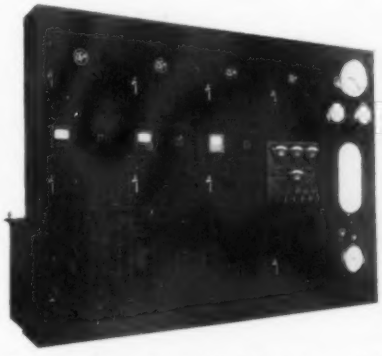
Seven new Westinghouse metal-clad units replaced the entire old distribution switchboard of the Mishawaka, Ind., Municipal Electric Plant; Half of Old Board Shown at Right; Circuits Changed Over One by One to Avoid Interruption of Service

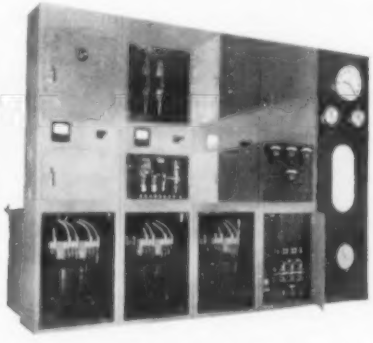
ations aside, the superintendent would like to see his plant equipped with metal-clad switchgear, just as the fire chief *wants* modern apparatus. Obsolete equipment of any kind certainly does not add to the prestige of the superintendent, the plant or the commission.

A long-established municipal electric plant has a way of being taken for granted. It might be good for the plant and the municipal government to make the citizens more aware of their utility and the progressiveness of its management. An effective way to do this could be to clean it up and install modern switchgear, and hold an inspection. The local business and civic organization would undoubtedly go along with the plan, because the program could include not only the display of a modern power plant but, with the cooperation of the appliance interests of the town, could give a glimpse of the degree of electrification, the increased use of electric appliances, the curve of electric rates, the rates translated into what a dollar will buy in lessened drudgery for the woman. There could also be shown photographs of the interiors of private and municipal plants which are modern. This material is available and should provide an exhibit of keen interest to the townspeople. The result of it would react favorably upon the plant.



Open-type switchgear at left was replaced by Allis-Chalmers vertical-lift metal-clad at right in Fremont, Nebr., Municipal Light Plant





Three-Motor 4,160-volt cubicle-type control, altitude regulator panel, and meter and clock panel, built by The Electric Controller & Mfg. Co. for the automatic pumping station of the Westchester Joint Water Works, Mamaroneck, N. Y. Opening a door shuts down the starter, thus preventing pulling disconnects under load. No conduits, less labor, factory-assembled

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Beauty and Safety in Christmas Decorations

To Reduce Christmas-Tree Fires

After trying various chemical treatments suggested for making spruce and balsam fir Christmas trees less inflammable, the Forest Products Laboratory, U. S. Forest Service, Madison, Wis., has concluded that keeping the tree standing in water is about the most practical, satisfactory, and convenient method of those tried that will keep the fire hazard low and prevent needles from discoloring or falling. The procedure recommended:

(1) Buy a tree that has been cut as recently as possible.

(2) Cut off the end of the trunk diagonally at least one inch above the original cut end. Stand the tree at once in a container of water and keep the water level above the cut surface. If the tree is not set up for several days, it should stand in water meanwhile in a cool place.

If started in time, this treatment not only prevents the needles from drying out and becoming inflammable, but it will also keep them fresh and green and retard the fall of needles of such species as spruce, which loses needles very easily in contrast to balsam fir which retains its needles even after the branches have become dry and the needles brittle. Freshly cut spruce or balsam fir trees standing in water can not be set on fire by candle or match fires, but, of course, can not withstand a large source of heat.

Xmas Decorations on Township Building

Regardless of treatment, all possible precautions against fire, should be in effect around the Christmas tree, including the elimination of defective electrical connections, and avoidance of the accumulation of combustible decorations on or beneath the tree. The tree should be placed so that its accidential burning would not ignite curtains or other combustible furnishings nor trap room occupants.

Xmas-Lighting Contest

The accompanying illustrations, sent to THE AMERICAN CITY by W. L. Stanley, Commissioner of the Township of Mount Lebanon, Pa., and former Secretary of the Mount Lebanon Civic League, shows one of the elaborate displays which was exhibited last year for the Christmas Lighting Contest, sponsored each year by the League. Prizes of useful household articles, amounting in value to about $60, are paid for out of a community-celebration fund established in 1932, and donated by local residents for city celebrations.

Fargo Airport Development by Gift and CAA Construction

Soil-Cement Runways Feature North Dakota Airport Improvements for Use as Military Operations Center

The Big Jaeger Traveling Mixer Moving to a New Windrow

THE leading civic-minded citizen of Fargo, N. Dak., Martin Hector, presented in 1927 a quarter-section of land to the city for use as an airport. It was not just some land that Mr. Hector owned, but was chosen carefully and in conference with city and Federal officials as the best location for airport development in the vicinity. That the original site was well chosen is evidenced by the selection of this port as one of the 200 to be expanded for military use by the Civil Aeronautics Authority and the Air Corps, U. S. A. So flat is this original 160 acres that it is impossible to place a 1-foot contour on the ground. The area is the bottom of Lake Agassiz of post-glacial origin, and was formed by the retreating glaciers.

In 1939 the city acquired four 40-acre additions to the north of the original quarter-section and, in the winter of 1941, another 40-acre section to make possible the construction of a 5,000-foot runway for instrument landing. On July 18, 1941, Mrs. Margaret S. Hector, the daughter-in-law of the original donor of the land for the Fargo Municipal Airport, which has always been called Hector Field in his honor, presented two more parcels of land to the city for the airport: one a strip 495 feet wide and approximately ½-mile long, bordering the airport on the east and containing 27.86 acres, which will accommodate new buildings and also buildings now on the airport proper; and a second parcel containing 8.17 acres, to provide a new access road into the airport from the east. This now gives the airport an area of 395.03 acres.

Original Runways

The sub-soil of the airport is Fargo clay, varying from 90 to 200 feet deep on top of bed-rock. This is a very heavy silty gumbo which expands about 20 per cent owing to moisture. On this material, however, the city constructed a very acceptable runway facility for aeroplanes as follows: A NW-SE runway 3,400 feet long and 80 feet wide on a cinder fill with a 4-inch stabilized base and a 2-inch bituminous top having a 1-foot crown. In addition, a N-S runway 2,500 feet long and 80 feet wide, and a NE-SW runway of the same size were built of cinders with no surfacing.

In the field before the present expansion program began, there were more than 25 miles of sub-drains from 6 to 60 inches in diameter including butt joint vitrified clay, bell-and-spigot joint vitrified clay up to 18-inch diameter, and reinforced concrete pipe from 18 to 60 inches in diameter, as well as 4 miles of open boundary ditch.

Airport Facilities

An administration building was built in 1935 with WPA labor at a material cost of $9,975 to the city. A 100 x 100-foot hangar with a Keefe timber laminated arch roof was also constructed, with an 80 x 16-foot front door and a 95 x 20-foot rear door. Northwestern Airlines has built a 60 x 80-foot hangar of simple timber truss and frame construction. There are twenty-nine resident planes based at the airport and six transcontinental daily services, three each way. In addition, there are two daily flights each way to Winnipeg. There are 59 employees at the airport, including the Weather Bureau, Civil Aeronautics Authority, Northwestern Airlines, Department of Commerce, City Employees, Restaurant Employees, and Customs and Immigration Officers, since the Airport is only 180 miles from the Cana-

Mixing a Windrow of Selected Soils and Cement, with a Windrow Already Mixed Between the Jaeger Traveling Mixer and the Water Truck

dian Border. Northwestern Airlines is also planning the immediate construction of a 125 x 150-foot hangar.

The original 160-acre airport was equipped with boundary lights, a flashing beacon, approach lights and floodlights. These are to be replaced entirely under the CAA construction program described below.

During the summer of 1941 the airport was equipped to handle 75, 87 and 100 octane gas with 24-hour service, and also all grades of lubricating oil. A $12,000 repair shop, 60 x 75 feet, was also built for the use of planes at the port and those landing and requiring service.

CAA Expansion

As the Fargo airport was selected as one of the 200 municipal airports in the country to be expanded for military service, a large program was instituted early in 1941. This was made possible as the city acquired four 40-acre parcels to the north of the original airport in 1939 and a fifth in 1940, so that under the present CAA program, a new 5,000-foot runway 150 feet wide and with drainage ditches 102 feet either side of the center line is being built for blind landing. The old NW-SE runway is being extended 1,800 feet to a total length of 5,000 feet, and the entire length of the runway is being resurfaced similar to the blind landing runway with soil-cement surface on a 6-inch stabilized gravel base and with 6-inch stabilized shoulders. This base, as well as that for the N-S runway, is on a 300-foot wide fill 2½ feet deep feathering to 6 inches at the edges.

The construction of the soil-cement runways required the importing of sand and gravel from a distance of nearly 14 miles, since no gravel is available in the area at the bottom of Lake Agassiz. The gravel, and clay from pits just to the south of Fargo, were windrowed and mixed by a Jaeger traveling mixer at the rate of 600 feet per hour after cement in the proper quantity had been dumped on top of the windrows and water from 1 to 2 per cent in excess of the optimum moisture content had been added in the mixing. This material was bladed out to 25-foot widths between 6 x 6-inch rough timber forms, compacted by sheepsfoot rollers, bladed, worked over with a spike-tooth harrow and rolled to final compaction with a pneumatic-tired roller, then lightly scarified with a wire broom and finish-rolled with a 6½-ton steel roller. After a light sprinkling, the soil cement base was covered with Sisalkraft paper for 7-day curing.

The Delivery End—the Mixed Windrow of Soil-Cement Ready to be Bladed to a Uniform Base Slab

All construction at the airport prior to the present CAA program, which is directed by the St. Paul District Office, U. S. Engineer Department, was done under the direction of W. P. Tarbell, City Engineer, Fargo. The present construction is under the direction of Major J. W. Moreland, District Engineer, U. S. Engineer Office, St. Paul, with W. C. Lincoln as Resident Engineer.

• • • —

New Patterns for Old Cities

ADVANTAGES of the neighborhood unit as a basis for city replanning were pointed out by Gordon Whitnall, former field consultant for the American Society of Planning Officials, at a recent conference of the Urban Land Institute, of which he is now city planning consultant:

The neighborhood unit, as the cell which—multiplied in varying degrees—determines the size of a metropolis, should not, in itself, increase greatly in size. The size of an automobile does not grow with increased demand for volume of transportation, nor does the size of a typewriter increase with the growth of office output; so why should the size of a neighborhood increase greatly? Increased size in the aggregate unit merely involves an increased number of the constituent parts.

Big cities do not need to lose the pleasant amenities of daily living enjoyed by smaller communities if they will design their component parts into neighborhoods, each provided with all of the essential requisites to make it a complete unit, and then correlate all such units into a complete city plan, well balanced and functionally sound.

An urban community cannot persist economically, functionally, or socially sound so long as it consists of a formless plasmic mass. A neighborhood should be planned, as a residence is planned, to provide all of the requisites needed for the convenience, comfort, and welfare of the residents within it. Necessity has brought us to the threshold of the day when in the design and construction of cities, just as in the design and construction of the individual building, we are being forced to consider the whole from a functional standpoint and then to design the component parts for the specific uses to which they are to be put. . . .

In cities, as in families, there is ever-present the non-conformist, be he innocent and casual, or be he malicious. For such, it is necessary that we prescribe certain rules in order that there shall be tranquillity and compatibility in the household. This means that we not only need revision of zoning practices and policies, but we need a new concept of where zoning fits into the life of the city.

In view of the growing necessity for replanning and reconstructing blighted areas of existing cities, it becomes both necessary and possible to synchronize physical design, and use control. Thus the function of zoning becomes an important element in initial development rather than a superimposed afterthought in an effort to rectify basic errors of development.

Asphalt Paving by Night Aids City Traffic

Rochester, N. Y., Is Engaged in an Intensive Program to Repave Business District; Financed by Bond Issue

FOR two weeks during June, 1941, crowds gathered on the sidewalks of Main Street, Rochester, to watch the resurfacing of a block a night. They were impressed with the businesslike manner in which trucks arrived with their loads of hot paving mixture, delivered them quickly to the machine that spread the material uniformly, and then sped away into the night for more hot stuff.

Rochester started this program with a special bond issue authorization of about $1,000,000 when the street-railway system abandoned street cars and installed buses. The sum of $650,000 was borrowed in 1940, and approximately $850,000 will be added in 1941. The total authorization to date is $1,700,000.

Preparation

The removal of the street-car tracks on Main Street, the resurfacing of which is the specific subject of this article, was begun in April, by the Rochester Transit Corporation and the Maintenance Section of the Department of Public Works. This whole project, except for the actual removal of the steel rails, has been financed by the city and carried out by city employees, with no relief labor. The street-car tracks were removed and ties and ballast taken out when they were not in good condition, but left in place when they provided a solid foundation. When they were removed, the area was filled with reinforced concrete pavement and a 1-inch binder placed on the top awaiting resurfacing operations.

As much as 6 inches of the old pavement was removed in many cases adjacent to the curb, where it had been softened by oil drippings from parked cars. The utilities were required to break out the concrete around manholes so that all these frames could be raised to the proper grade for the new 1½-inch compacted top of stone-filled sheet asphalt. The work was planned well ahead with the Rochester Transit Corporation, before the two-week job of resurfacing Main Street was undertaken. It was necessary for the bus lines to be rerouted from 8 o'clock at night until 6 o'clock in the morning, when the last operation was completed in any block. By careful planning, the Transit Corporation knew well ahead exactly how it should instruct its drivers to carry-on their routes and where they had to detour around paving. Usually four or five police officers were detailed to prevent careless automobile drivers from coming through alleys and removing barricades or driving around them onto freshly laid asphalt which had not been completely rolled. They were very effective in this work.

Truck Hauling

Work started at 8 P.M. each night when the street in the section to be paved that night had been cleared of all parked cars, and cars had been removed from intersections adjacent to the work, so that the rollers would have ample area in which to work.

All the asphalt mixture was prepared at the municipal asphalt plant, an average haul of 3½ miles from the work. This trip was made regularly by the trucks in about 11 minutes each way. A fleet of six trucks composed of three Walter Snow Fighters with dump-bodies hauling 10 tons per load, and three 8-ton Brockway dump units from the regular fleet, was used daily by the Department of Public Works. Each load was carefully weighed at the asphalt plant, and the driver was given a ticket which was taken up by the foreman when the load was spread.

Inasmuch as fuel oil prices had already begun to rise, and it was advisable to find a substitute for this material for oiling the truck bodies to prevent the asphalt mix from sticking, a satisfactory substitute was located in the cheapest grade of common paste soap. This type of soap comes in 50-gallon drums containing about 475 pounds

One of the City's Walter Snow Fighters Delivering a Load of 21,500 Pounds of Asphalt Top

The Barber-Greene Tamping Finisher Working Along the Curb at 9:15 at Night at Rochester

per drum. Three pounds of this soap is added to 25 gallons of warm water and allowed to set. This amount is just about right to keep the soap in solution without continuous agitation.

Spreading the Mix

If there were no delays due to unusual conditions at intersections or an exceptionally large number of utility manholes, curb inlets and gratings or valve-boxes in the street, it was possible to completely surface 500 feet of the 60-foot street, laying 400 tons of asphalt per night. The plant was started up early enough to load all the trucks and have them on the way to the job ready to deliver the hot material to the spreader shortly after 8 o'clock, when actual spreading started. Each load was covered with tarpaulin to conserve the heat. The paving was completed about 4 A.M., and rolling by 6 A.M. The plant trucks and spreader sometimes worked overtime to get out of a bad spot, such as an intersection, for it was felt essential to complete any intersection that was started during a night's work.

One of the newest Barber-Greene tamping finishers was used for spreading the 10-foot strip of hot-mix asphalt. A 10-ton load was spread in about three minutes, provided the work was not against the curb, where the machine had to operate more slowly, or there were not other unusual conditions. The spreader was equipped with five automobile headlights, two of which are on the front of the machine to illuminate the hopper, two on the back to illuminate the edges so that the wing men could see what they were doing, and one directed on the spiral spreader so that the operator could see that all was well at that important place in the spreading operation. The machine was further equipped with a tank and small pump and some 10 feet of hose, so that the hopper, the rolls which go against the tires of the truck, and the screw, could be sprayed with fuel oil or the soap mixture to keep them from being gummed up with asphalt if a cool load came in because of any delays. The machine was thoroughly cleaned of asphalt sticking to any part of it, after each night's operation, and thoroughly oiled or soaped before starting. In this manner, with such excellent maintenance, the machine operated smoothly without any difficulty throughout the entire work.

The crew spreading the asphalt consisted of the operator of the Barber-Greene machine, two wing men, two men shoveling in front of the hopper and, to prevent the asphalt from the truck from going over the edge of the hopper, one raker on the edge between the lanes when spreading a second lane, and two men with hot irons sealing the edge. A Littleford firewagon, with an oil torch, kept the necessary number of irons and tampers hot, ready for use. The edge against the section previously laid, whether at the start of work or alongside a lane, was hand-tamped at the edge after raking; and all edges around manholes and shut-off boxes, and at the curbs, were also hand-tamped.

Rolling

Next in importance to careful spreading of a well-mixed paving material is the type of roller and manner of rolling. In Rochester, they use a 7-ton Buffalo-Springfield tandem for the breakdown, followed by an 8-ton Buffalo-Springfield tandem loaded with water to the equivalent of a 10-ton roller, and finally a 10-ton Buffalo-Springfield tandem roller loaded to the equivalent of a 12-ton. When a second strip is being laid and has been rolled by the 7-ton roller, the medium and heavy rollers are used for cross-rolling in every conceivable direction. The first rolling, by the lightest-weight roller, is done as close to the spreader as possible, and because of the maneuverability of the machine it handles rolling remarkably close to the curb. As soon as the first rolling is complete, the pavement is straight-edged both

(*Continued on page 81*)

Rolling Top Immediately Behind the Spreader with a 7-ton Buffalo-Springfield Tandem Roller

Oklahoma City Water Supply Being Improved and Enlarged

New Supply and Treatment Works Being Built by Force Account and Contract Within Bond Issue

By Horace Thompson

WAR-TIME emergency and municipal economy were the chief factors in Oklahoma City's decision to become her own contractor for major portions of work on a new $6,911,000 municipal water-supply system now under construction. The project was initiated as a normal development in the growth of a progressive southwestern city of 204,000 population that was being served with a water supply designed for half that number of people.

Severe Water Shortage

Repeated drouths emphasized the problem during the last decade, and recurrent water shortages in summer became so well advertised that new industrial money shunned locations in Oklahoma's capital city. There were times when the bathtub spigot responded with only a small trickle of water to cool the householder's temper and temperature on 100-degree days. It didn't take long for him to find out why his water supply was low.

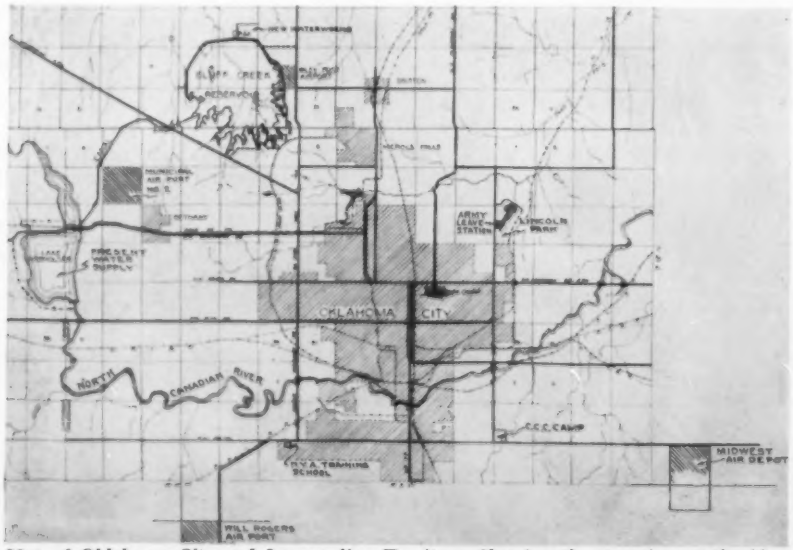
Oklahoma City's water comes from the North Canadian River, an erratic tributary of the Mississippi in the Arkansas River basin. Its bed is almost dry except in flood periods of spring and autumn each year. Since 1918 the city has depended for water storage on a river-fed basin. As the city's population increased, the reservoir capacity became proportionately inadequate, until in 1940 it held barely enough water for eight months' requirement at a time. When the semi-annual floods failed, the water storage failed.

Consumption Booms

That was only part of the trouble. The city's filtration plant was constructed in 1923, with rated capacity of 16,000,000 gallons daily, but consumption in summer ran as high as 31,000,000 gallons on peak days. In the drouth of 1936, and again in 1940, the low lake level coupled with inadequate filtration and treatment capacity gave the city's water supply the all-inclusive brand of "mudpuddle."

The effect was costly to the taxpayers. Newly developed oil fields in 1936 were using 10,000,000 gallons of city water daily in their operations. They were shut off, and because oil companies drilled their own water wells, the city lost that water business permanently. It was no small item, considering that the city's general operation and maintenance expense of all municipal departments is financed nearly 38 per cent from water revenues.

After a board of engineers surveyed and analyzed all possible means of increasing and improving the water supply, and reported that the best and most economical water source available is from flood waters of the North Canadian River, the voters approved general obligation water bonds totaling $6,911,000 to build a brand-new storage lake, filtration and treatment plant, new pumping station, and additions to the city's 358 miles of distribution mains, and to modernize existing pumping and filtration facilities.



Map of Oklahoma City and Surrounding Territory, Showing the Location of the New Water-Supply Project and the Airports

New Source Chosen

The new lake site was selected in a natural basin on Bluff Creek, about 12 miles northwest of the city. It covers an area of 4,100 acres, of which 2,600 acres will represent the surface area of the lake when it is filled to an average depth

of 30 feet. A 5-mile diversion canal from the North Canadian River, with water flow controlled by inlet gates, was planned to take flood water from the river to the new lake by gravity. Land for these improvements was purchased under the city's power of eminent domain at the average price of $106 an acre—only a few dollars higher than most owners paid for it over the period of the last twenty years.

Validity of the water bond issue election, held in February, 1940, was attacked in the courts in a series of litigations, which delayed calling for contractors' bids until July, 1941.

In the intervening fourteen months several things happened to increase the need for speed in providing the proposed new improvements. The United States Army Air Corps located bombing squadrons and base units with personnel totaling 3,500 men and officers at Oklahoma City's new Will Rogers Airport. These were to be served with water from the city's questionable water supply.

A $20,000,000 Army Air Corps depot was located just outside the city limits. Construction work under contracts totaling more than $14,000,000 is now under way. Army engineers frowned upon the city's water scarcity and decided to try wells—at least until the municipal water supply could be enlarged.

Costs Are Skyrocketed

But the interval of delay produced another result even more far-reaching. By the time the first bids were opened, in July, 1941, the Government's emergency measure of issuing priority preference ratings had dammed sources of machinery and material supplies needed in constructing a water system. Labor and material costs had advanced far above engineering estimates made in November, 1939, upon which the amount of the water bond issue was based.

The first contract awarded covered construction of a 48-inch cast iron conduit from the proposed new lake and pumping station to the city water mains, and 27 miles of water-main extensions. The cost was $350,000 higher than engineering estimates.

Bids on the second unit of work consisting of an earthen dam similar to the type being built by the Federal Government for flood control, and excavation of the diversion canal, totaled $858,000 above engineering estimates.

It was at that point that city officials called a halt. Obviously, at the rate of increase in cost reflected by these bids, the bond issue would lack $1,250,000 or more of being sufficient to complete the project under private contracts as planned.

City Manager H. E. Bailey, a former railroad construction engineer familiar with costs of moving dirt, compiled a detailed analysis of the dam and canal bid, and compared it, unit for unit, with the estimates prepared by V. V. Long, Chief Engineer, in consultation with Porter Preston, Denver, Colo., Consulting Engineer.

This breakdown revealed a bid price of $2,064,300 for moving 4,145,000 cubic yards of dirt, of which half was to be taken from the canal excavation and compacted in the dam with an average 4½-mile dirt haul. The unit bid cost for moving the dirt alone therefore figured 49.8 cents a cubic yard. Bailey advised city officials that 30 cents was a reasonable cost.

City Gets to Work

More by way of illustration than for the purpose of proposing a plan of action, Bailey used the bidder's quotations as a starting figure, and by deleting all profit, overhead costs of payroll taxes, performance bonds, compensation insurance, sales taxes, excises on materials, and the estimated income tax the contractor might be expected to pay from profits on the job, Bailey announced, "The bid is somewhere near $850,000 too high on the dirt portion alone."

Joe C. Campbell, Vice-Mayor and former President of the State Federation of American Federation of Labor unions, gave voice to the idea born in the minds of city councilmen from Bailey's figures.

"Under the law, the municipality is not chargeable with any of those overhead costs, and cannot figure in a profit," he said. "These figures show the municipality can build this project as its own contractor, and stay within the available money."

Mayor Robert A. Hefner, former Justice of the Oklahoma Supreme Court, announced that the plan would be legal. Taxpayers, who in mass meetings had rejected the suggestion of a supplementary bond issue, greeted the announcement joyfully, and the problems of the city as a contractor immediately started.

Universally, it is the municipal council's traditional right to exercise large powers over political patronage in distributing jobs. The Oklahoma City Council members were swamped by applicants for work on the project. They met this avalanche with a resolution pledging a strict "hands-off" policy with regard to personnel, and thought that by doing so they had dumped the whole job problem in Bailey's lap.

But people generally winked when the resolution was mentioned, for the Council could repeal it at any moment. Moreover, by charter provision, the manager's tenure is at the will of the council, and there were those who believed the Council could wield that club in their favor.

Prohibited by charter from making the Manager's term secure by a term contract, the Council ingeniously utilized its authority to hire engineers, and made a contract with Bailey as superintending engineer on the water project, to become effective if "for any reason" he ceases to be City Manager during the course of construction.

That measure effectively placed the Manager outside the arc of the Council's club over his job, and left him as much in charge of the project as a private contractor would be.

Equipment Rented

Bailey's first step was to advertise for bids to rent or buy heavy dirt-moving equipment. Rental of equipment was decided upon after lengthy conferences with equipment dealers. These conferences revealed that new equipment could not be delivered promptly, even though the city's water project had been given a priority preference rating of A-10 in the defense classification.

(Continued on page 79)

Local Government Is News—XII

Annual-Report Time Rolls Around Again—What to Do?

By Phillips Bradley

AS THE year-end approaches, the question of the next annual report bobs up with increasing urgency on the "tickler" file. Something has to be done about it—what to do?

Reports vary, of course, in character and scope. Both will, in large measure, depend on whether they are intended to give an account of a single bureau, a whole department, or the city at large. The job of writing each type of report is different—even if it is intended to account only in one way for the year's record. Some reports are designed to be primarily internal records of work performed, costs, or personnel. Others are directed toward the public—Mr. and Mrs. Citizen and Junior Citizen. Here not only a record but an effective interpretation and an honest appraisal will make all the difference between the report being read, or thrown into the wastebasket. What can we do to keep our reports out of the citizens' wastebasket—and City Hall in the public eye?

Some Essentials

A number of specific suggestions on making annual reports more effective have been included in earlier articles in this series. Charts, diagrams, pictures, pictograms—these are some of the ways to interpret services and activities, budgets and accounts, so that everyone can understand them. Special reports on particular aspects of the functions of City Hall or of the larger departments add spice to citizen-interest in civic affairs. "Vest-pocket reporting"—little leaflets that can be distributed, widely read at a glance, and filed for reference—is a good investment in City Hall publicity.

A New Year's Policy

By way of summary—for reporting and for the broader aspects of City Hall's public relations—the following points may serve as suggestions for the New Year:

1. Make the picture of local government something more than a series of "stills": indicate its 24-hour-a-day, year-round activities as the service agency of a going concern—the body politic.

2. Simplify and digest facts and figures—especially financial statistics. Be liberal with interpretation and explanation—not justification or propaganda.

3. Compare costs, services, and programs—from last year to this year.

4. Let graphs and illustrations—plenty of them—tell the story of performance directly. Make use of whatever new ways of telling old stories, of illustrating work done, will be most effective.

5. Utilize existing means of legitimate publicity—and discover new ones—for interpreting the day-to-day activities and for submitting current problems of policy and administration to the scrutiny of the stockholders—the voters.

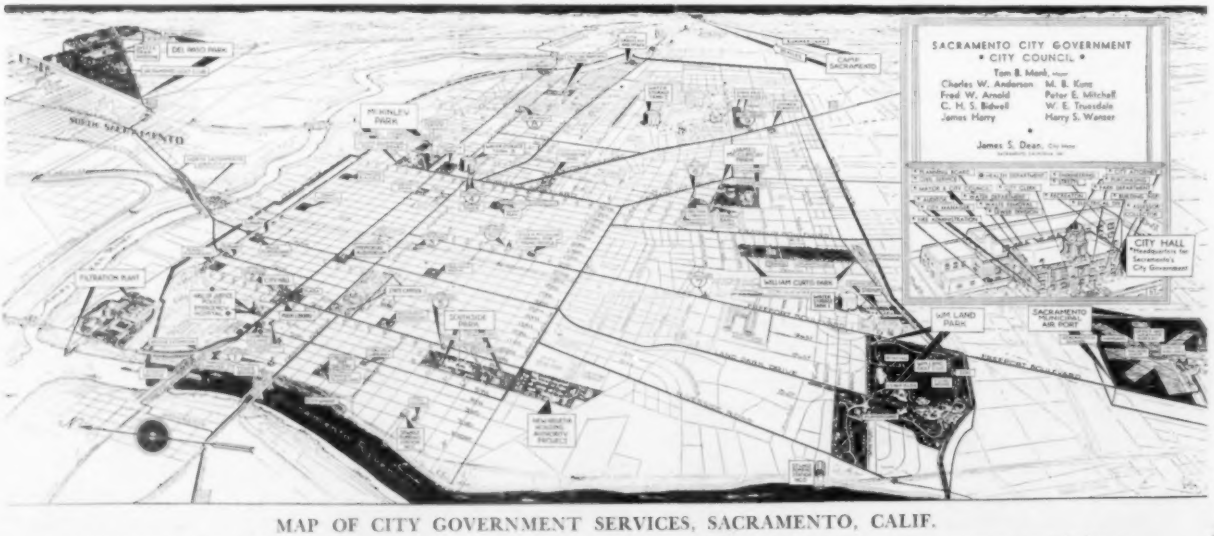
6. Leave the door open for personal contact and suggestion: make the road to the town or city hall easy and friendly by facilitating direct relations between "the government" and the citizen.

Making Services and Procedures Understood

One of the things most people do not understand as well as they should is how to use their city services. How these services are organized and the steps they go through are mysteries to the average citizen. What can we do to take mystery out of City Hall's services and procedures?

Several cities have been developing new ways of bringing home to the citizen how his city services can be reached and how they run.

A bird's-eye map of the city—in the annual report and separately printed, too, for wide circulation—locating the various city agencies, is a handy reference for the citizen. Brief descriptions of the services which these agencies perform for



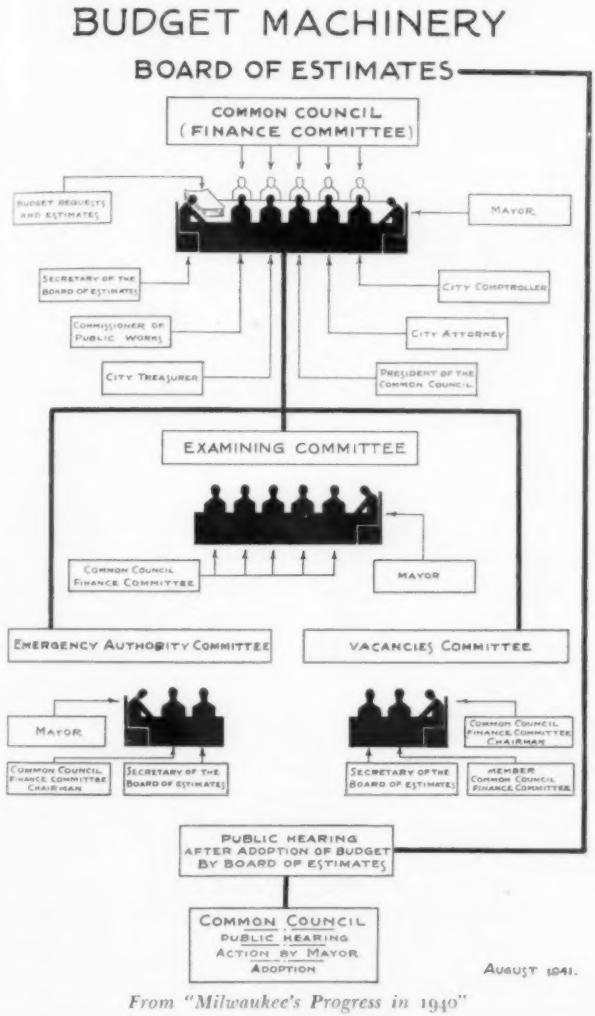
MAP OF CITY GOVERNMENT SERVICES, SACRAMENTO, CALIF.

This map (18 x 7½ inches in size) appears in an attractive folder, published by the City of Sacramento, containing a Municipal Calendar and Facts About Sacramento

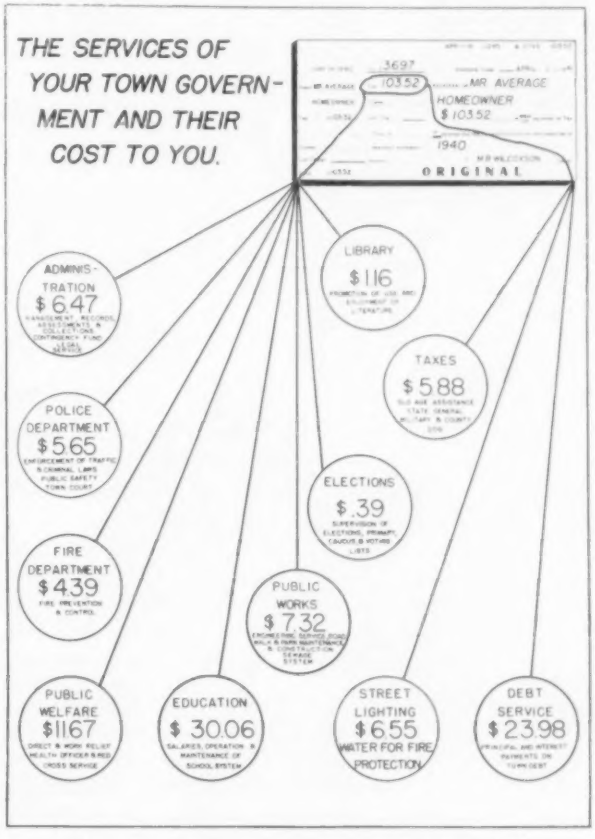
the citizen can be printed on the back. If there is no city information office, this is a good way of starting a campaign to make City Hall more meaningful to the people.

One of the things few voters know much about is just how a budget is made. A graphic presentation of the various stages in preparing and paring the budget will do much to explain why and how the tax bill adds up each year.

"Before and after" pictures can do much to make the citizen aware of the services he is getting for his taxes. They can perhaps be most effectively presented about the city's physical improvements such as streets, parks, playgrounds. But new installations of equipment, improvements in office procedures, economies which do not decrease efficiency, and the like, can aid the citizen to understand how well his City Hall is keeping up to date and operating economically.



From "Milwaukee's Progress in 1940"



WHAT THE TAXPAYER GETS FOR HIS MONEY

From the Annual Report on Municipal Activities of Stratford, Conn., for the Fiscal Year 1940-41

(Twentieth Year of Council-Manager Government)

"Before and After" Views from the Front Cover of "Milwaukee's Progress in 1940"

JAMES B. CLOW & SONS . . . . . COSHOCTON, OHIO

BIRMINGHAM, ALABAMA . . . . NATIONAL CAST IRON PIPE

I always like to hear my boy say

"THANK YOU VERY MUCH"

and that is what I say to you today

KENT S. CLOW*

We haven't forgotten that loyalty to our customers is our best business asset. We certainly have not become "priority snooty." Therefore, if you get a letter from us asking for a priority rating before we can ship materials that you need, don't think that we have gone "high-hat" as the result of the crowded condition of our order book—far from it. We are merely complying with Government requirements and endeavoring as always to be helpful to our friends.

To preserve pig iron (our basic raw material), a rigid system of "priorities" has been instituted. In compliance with the Government's request, our stocks of raw materials and of cast iron pipe and fittings have been reduced to a minimum. They can only be replenished to fill orders that have an "A" priority rating. Right now, our plants are working double shift on orders for a large tonnage of pipe and fittings for army camps, air bases, powder plants, and many industrial plants directly and indirectly engaged in filling army and navy orders—all having high priority ratings.

The priority rulings to date have no intention to entirely eliminate essential civilian services. It has been our experience that where a real need for pipe and fittings exists, a request for the necessary priority has usually received sympathetic attention.

We are most anxious to be helpful to you for we deeply appreciate that our future depends upon our ability to retain your friendship and good will during the present crisis. We pledge ourselves to do everything permitted by existing regulations to justify your continued support both now and after the present emergency is over.

For your understanding of our problem, for your kindly patience, and for your wholehearted cooperation—we most cordially say

"THANK YOU VERY MUCH"

*President of the Clow-National organization. General offices at 201-299 N. Talman Ave., Chicago, Ill.

A Municipal Credit Rating Scale

A Tentative Proposal, with Suggestions for Further Study

By JAMES E. McCABE

A SERIOUS deficiency in the field of municipal credit has been the lack of uniform, accurately weighted, universally accepted standards for credit appraisal. A study which was completed in May made a direct attack on this problem. The survey, conducted at Syracuse University, had as its basic aim the measurement of the relative importance of the multitude of factors now used in analyzing municipal credit. Rather than relying on the subjective opinion of a single individual, an attempt was made to utilize the collective judgment of the men most qualified to judge.

Accordingly, an original questionnaire containing 167 credit factors was distributed to a highly selected group of experts familiar with municipal credit and finance. They were asked to record their opinion of the effect of each factor on the soundness or unsoundness of any municipality. A total of 77 copies of the questionnaire was distributed, of which 45 were returned in time to be included in the final analysis.

Summary of Findings

Out of the 167 statements in the original questionnaire, 69 factors were selected to produce the final Rating Scale. These are the factors deemed most significant for over-all appraisal purposes by the expert sample of raters. For each factor so selected, an accompanying numerical value or score was produced, based on the composite judgment of the experts. On the following page is a copy of the final Rating Scale and the accompanying Code Scores.

Application of the Scale

The following attempt has been made to validate the products of the investigation. Information was gathered on 25 cities of great financial and geographic diversity. The Rating Scale was applied to each city, yielding an average score for each. These scores were then correlated with Moody's Ratings, the only available universal system of ratings. The results showed a correlation of ÷ .899, strikingly high for most social data.

Below is a table showing the sample of cities, the score for each as produced by the scale, and the rating given to each by Moody's Investor's Service (1941). This Service employs a system of nine ratings or classes ranging from good to bad as follows: Aaa, Aa, A, Baa, Ba, B, Caa, Ca, C.

SCALE SCORE AND MOODY'S RATINGS FOR 25 MUNICIPALITIES

	Municipality	Scale Score	Moody's Rating
1.	Berkeley, Calif.	78	Aa
2.	Baltimore, Md.	75	Aaa
3.	San Diego, Calif.	75	A
4.	Binghamton, N. Y.	74	Aaa
5.	St. Paul, Minn.	72	Aa
6.	Newton, Mass.	71	Aa
7.	Springfield, Mass.	71	Aaa
8.	Bloomfield, N. J.	71	A
9.	Worcester, Mass.	71	Aaa
10.	St. Joseph, Mo.	68	A
11.	Columbus, Ohio	66	A
12.	Rochester, N. Y.	66	Aa
13.	Montclair, N. J.	63	A
14.	Fort Worth, Texas	63	Baa
15.	Toledo, Ohio	61	Baa
16.	Phoenix, Ariz.	61	A
17.	Chattanooga, Tenn.	57	Baa
18.	Pontiac, Mich.	55	Ba
19.	Perth Amboy, N. J.	54	Ba
20.	Knoxville, Tenn.	54	Baa
21.	San Antonio, Texas	54	Baa
22.	Asbury Park, N. J.	51	B
23.	Woodbridge, N. J.	49	B
24.	North Bergen, N. J.	48	Ba
25.	St. Petersburg, Fla.	43	B

In scoring any city it is obvious that a municipality represents a complex pattern of many diverse and intangible factors which cannot be described by a single number. The average of the scores of all the statements checked can be used to rate the cities in question, but the pattern can better be conceived as a vicinity rather than a single point on a scale. Thus, in the above ranking of cities, attempt should be made to place them in rough classes rather than to compare them too minutely. For this, a transfer of numerical into broader letter grades should be made at some future date. It is true that certain individual cities received scores seemingly out of line with others when considered in a rank order, and from this small sample it appears that perhaps the rating device can best be considered as a preliminary method of appraisal. At any event, it can be said that a rough start has been made into the analysis of expert opinion and judgment in the municipal field, and an illuminating spot picture of group thinking has been produced. Urgent need exists for further exploration and development along this avenue of study.

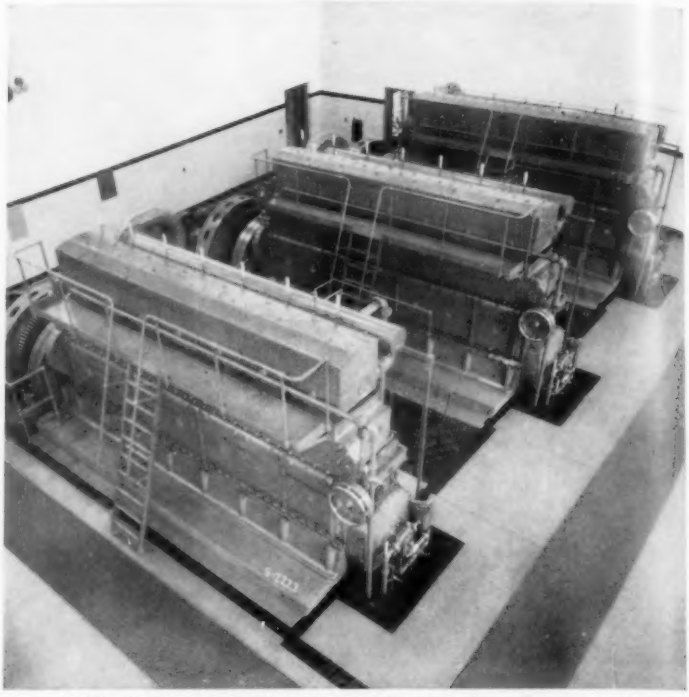
Perhaps the most immediate need is persistent application of the scale presented here to a larger and larger number and variety of localities, to the end that its principal defects and inadequacies can be discovered and remedied. Only constant application can bring these to light. It is entirely possible that some of the vital areas of municipal credit were untouched by this study, a possibility in a time of crisis when cities are undergoing rapid and drastic changes. On the other hand, further pursuit may demonstrate that areas relating to local credit are over-emphasized by the rating device chosen, and correction may be possible. It may be evident, on further application, that the factors finally chosen apply to most ordinary municipal situations, but may produce erroneous results when applied to situations of unusual character, such as a so-called "boom town" or a single-industry town. Finally, after sufficient application, it may be possible and desirable to transfer numerical scores to broader letter grades, eliminating the present oversimplification of placing undue stress on a difference of a few points in numerical scores.

Improved Appraisal Standards Needed

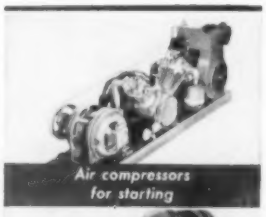
Another suggested path of examination is directed at those men actually engaged in day-to-day municipal bond analysis, since they are perhaps best qualified to make a contribution. Need exists for more and more common appraisal standards which can be applied to all cities. The deficiency is readily visible in the area of Current Operations Analysis, and may be largely due to lack of uniform accounting practices. If that is true, perhaps improvements in accounting and methods of financial reporting will have to lead the way. At any rate, need is vital for patient and persistent guidance running through a series of connected studies. Closely allied is the necessity for establishing a body of common definitions and terminology, a task for an over-all agency influential in the municipal field. An obvious difficulty in applying all rating devices is the effort and expense involved in gathering the information in the first instance, and the reduction of it to a form comparable with data from other cities.

Uninterrupted POWER

a defense factor of basic importance



Three 875-hp. Worthington diesel engines driving Electric Machinery Company generators, in a midwestern municipal power plant. All principal engine auxiliaries are Worthington.



Air compressors for starting

Centrifugal pumps for jacket water circulation

Evaporative coolers for jacket water cooling

Rotary pumps for fuel oil transfer

Worthington auxiliaries give additional service security, through the undivided responsibility of one maker

WORTHINGTON diesel and gas engine performance . . . in its effect on this important factor . . . is a matter of definite record in hundreds of installations and in a wide variety of applications.

In municipal, water works, sewage disposal, industrial, and in many special applications, Worthington engines are maintaining high operating efficiencies and *unbroken performance* over long periods of service.

Worthington's staff of qualified engineers will be glad to assist you with a thorough study of your power problem and submit a strictly unbiased recommendation for your individual conditions

DIESEL ENGINES
150 to 1500 hp.

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175 to 2160 hp.

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150 to 1500 hp.

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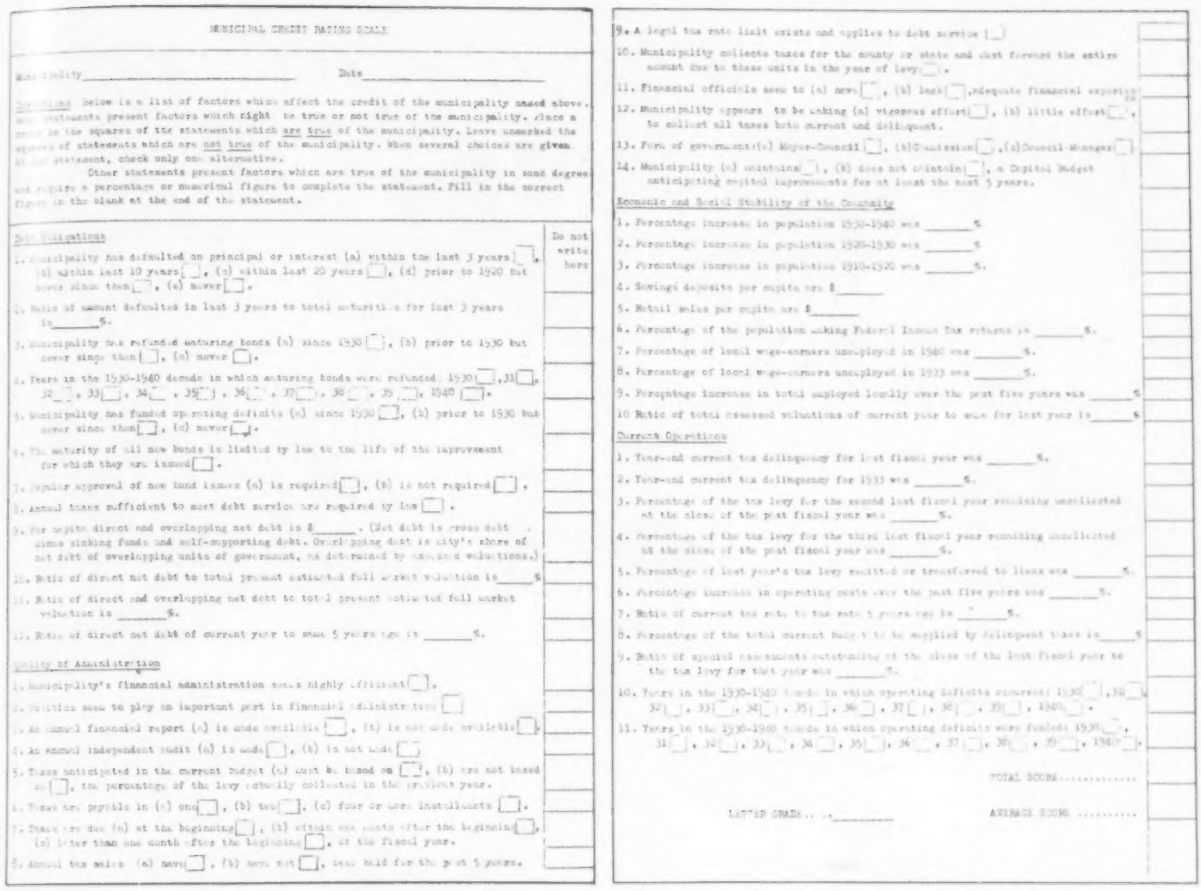
WORTHINGTON



MUNICIPAL CREDIT RATING SCALE

Municipality _____ Date _____

Directions: Below is a list of factors which affect the credit of the municipality named above. Some statements present factors which might be true or not true of the municipality. Place a check in the squares of the statements which are true of the municipality. Leave unmarked the squares of statements which are not true of the municipality. When several choices are given in each statement, check only one alternative.

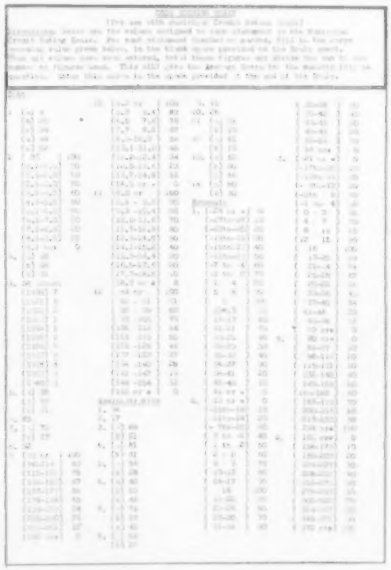
Other statements present factors which are true of the municipality in some degree and require a percentage or numerical figure to complete the statement. Fill in the correct figure in the blank at the end of the statement.

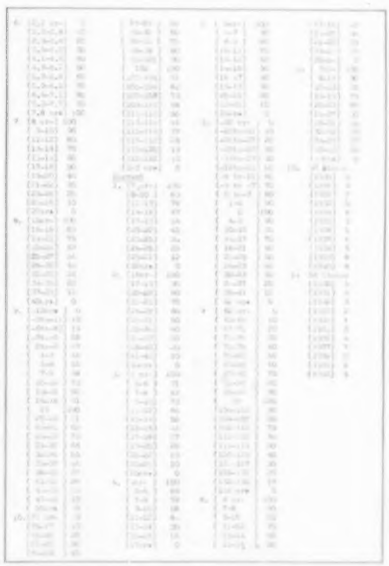
Debt Obligations	Do not write here
1. Municipality has defaulted on principal or interest (a) within the last 3 years [ ], (b) within last 10 years [ ], (c) within last 20 years [ ], (d) prior to 1920 but never since then [ ], (e) never [ ].	
2. Ratio of amount defaulted in last 3 years to total maturities for last 3 years is _____%.	
3. Municipality has refunded maturing bonds (a) since 1930 [ ], (b) prior to 1930 but never since then [ ], (c) never [ ].	
4. Years in the 1930-1940 decade in which maturing bonds were refunded: 1930 [ ], 31 [ ], 32 [ ], 33 [ ], 34 [ ], 35 [ ], 36 [ ], 37 [ ], 38 [ ], 39 [ ], 1940 [ ].	
5. Municipality has funded operating deficits (a) since 1930 [ ], (b) prior to 1930 but never since then [ ], (c) never [ ].	
6. The maturity of all new bonds is limited by law to the life of the improvement for which they are issued [ ].	
7. Popular approval of new bond issues (a) is required [ ], (b) is not required [ ].	
8. Annual taxes sufficient to meet debt service are required by law [ ].	
9. Per capita direct and overlapping net debt is $_____. (Net debt is gross debt minus sinking funds and self-supporting debt. Overlapping debt is city's share of net debt of overlapping units of government, as determined by assessed valuations.)	
10. Ratio of direct net debt to total present estimated full market valuation is _____%	
11. Ratio of direct and overlapping net debt to total present estimated full market valuation is _____%.	
12. Ratio of direct net debt of current year to same 5 years ago is _____%.	
Quality of Administration	
1. Municipality's financial administration seems highly efficient [ ].	
2. Politics seem to play an important part in financial administration [ ]	
3. An annual financial report (a) is made available [ ], (b) is not made available [ ].	
4. An annual independent audit (a) is made [ ], (b) is not made [ ].	
5. Taxes anticipated in the current budget (a) must be based on [ ], (b) are not based on [ ], the percentage of the levy actually collected in the previous year.	
6. Taxes are payable in (a) one [ ], (b) two [ ], (c) four or more installments [ ].	
7. Taxes are due (a) at the beginning [ ], (b) within one month after the beginning [ ], (c) later than one month after the beginning [ ], of the fiscal year.	
8. Annual tax sales (a) have [ ], (b) have not [ ], been held for the past 5 years.	

9. A legal tax rate limit exists and applies to debt service [ ]	
10. Municipality collects taxes for the county or state and does not forward the entire amount due to these units in the year of levy [ ].	
11. Financial officials seem to (a) have [ ], (b) lack [ ], adequate financial experience	
12. Municipality appears to be making (a) vigorous effort [ ], (b) little effort [ ], to collect all taxes both current and delinquent.	
13. Form of government: (a) Mayor-Council [ ], (b) Commission [ ], (c) Council Manager [ ]	
14. Municipality (a) maintains [ ], (b) does not maintain [ ], a Capital Budget anticipating capital improvements for at least the next 5 years.	
Economic and Social Stability of the Community	
1. Percentage increase in population 1930-1940 was _____%	
2. Percentage increase in population 1920-1930 was _____%	
3. Percentage increase in population 1910-1920 was _____%.	
4. Savings deposits per capita are $_____	
5. Retail sales per capita are $_____	
6. Percentage of the population making Federal Income Tax returns is _____%.	
7. Percentage of local wage-earners unemployed in 1940 was _____%.	
8. Percentage of local wage-earners unemployed in 1933 was _____%.	
9. Percentage increase in total employed locally over the past five years was _____%	
10 Ratio of total assessed valuations of current year to same for last year is _____%	
Current Operations	
1. Year-end current tax delinquency for last fiscal year was _____%.	
2. Year-end current tax delinquency for 1933 was _____%.	
3. Percentage of the tax levy for the second last fiscal year remaining uncollected at the close of the past fiscal year was _____%.	
4. Percentage of the tax levy for the third last fiscal year remaining uncollected at the close of the past fiscal year was _____%.	
5. Percentage of last year's tax levy remitted or transferred to liens was _____%.	
6. Percentage increase in operating costs over the past five years was _____%.	
7. Ratio of current tax rate to tax rate 5 years ago is _____%.	
8. Percentage of the total current budget to be supplied by delinquent taxes is _____%	
9. Ratio of special assessments outstanding at the close of the last fiscal year to the tax levy for that year was _____%.	
10. Years in the 1930-1940 decade in which operating deficits occurred: 1930 [ ], 31 [ ], 32 [ ], 33 [ ], 34 [ ], 35 [ ], 36 [ ], 37 [ ], 38 [ ], 39 [ ], 1940 [ ].	
11. Years in the 1930-1940 decade in which operating deficits were funded: 1930 [ ], 31 [ ], 32 [ ], 33 [ ], 34 [ ], 35 [ ], 36 [ ], 37 [ ], 38 [ ], 39 [ ], 1940 [ ].	
TOTAL SCORE.....	
LETTER GRADE... ._____ AVERAGE SCORE	

If this method of rating is deemed successful, periodic surveys of expert judgment will be needed every few years to permit the introduction of new standards and to record shifts occurring in the significance of various old standards due to changing conditions.

Vast strides have been made in methods of municipal analysis since 1930, and some standard practices and credit factors are generally accepted by the profession. Many speeches and articles have been written describing recognized techniques and methods, but there is urgent need for a complete and comprehensive Credit Appraisal Manual, written by a person of practical knowledge in the field, describing and drawing together into a single convenient volume all the many credit factors and investigation methods that have been discussed at random over a period of years.





A Word of Warning

Finally, a word should be said as to the proper place of credit ratings, and the danger which may attach to their over-emphasis. As in most of the social sciences, the human element cannot be eliminated. Credit is essentially a matter of judgment, and many of the intangible factors which are of tremendous importance in municipalities are not susceptible of statistical and mathematical treatment. To reduce such intangibles to simple formulas creates distortion, and to ignore them is scientific dishonesty. If a system of ratings produces such a result, a backward step has been made. Likewise, a rating plan misses its mark if it induces investors to take the easy and quick method of using the rating scale as an automatic substitute for careful and thoughtful analysis and investigation.

—Summary of a Master's Thesis written at Syracuse University, May, 1941.

Three groups that vote "YES" on SOFT WATER

INDUSTRY:
Boilerfeed and process water require less treatment at the plant.

HOMES:
Richer soft-water suds mean more luxury, less work.

SHOPS:
Better service, lower costs for laundries, beauty parlors, restaurants, etc.

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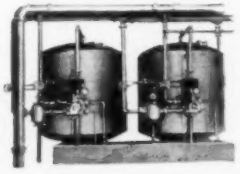
New cold-lime "precipitator" treatment takes only half the space of old-type plants, makes much bigger savings. Installations now in operation handle capacities up to 120,000,000 gallons daily.



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This simple method is fully automatic —no skilled operator is required. Available in a wide range of models and sizes. Permutit has ample stocks of zeolites for immediate delivery.

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WATER CONDITIONING HEADQUARTERS

Remodeling a Water Supply, New Wells and Dual Power

Turlock, Calif., Fulfills Underwriters' Regulations and Greatly Improves Operation of System

By F. K. Balch
Hydraulic Engineer

RECENT work in remodeling the Marshall Street station of the Turlock, Calif., water system has brought about certain improvements and greater fire protection for this city of 6,000 population. Underwriters' insurance regulations require that one of the three units operating on this system must have a double source of power in order to secure minimum insurance rates for both business houses and homes. The Marshall Street station was selected for this purpose, inasmuch as it originally contained three centrifugal pumps connected on the suction side of several shallow wells and driven by a 100-hp gas engine.

In remodeling the plant, it was considered desirable to retain the 100-hp engine on its original foundation and to drill a deep well at exact right angles to the engine set-up, 30 feet distant from the drive pulley of the engine. The engine, operating at 300 rpm, is belted straight ahead to a 30-foot extension of the drive shaft of a combination gear and motor-driven head, with a Watson-Spicer flexible coupling to eliminate vibration. In addition to the engine drive, the pump is equipped with a 75-hp 800-rpm Westinghouse V. H. S. motor. Insurance regulations require that the gas engine be operated a minimum of two hours each week. Switching over from normal motor operation to auxiliary engine drive requires less than 1 minute.

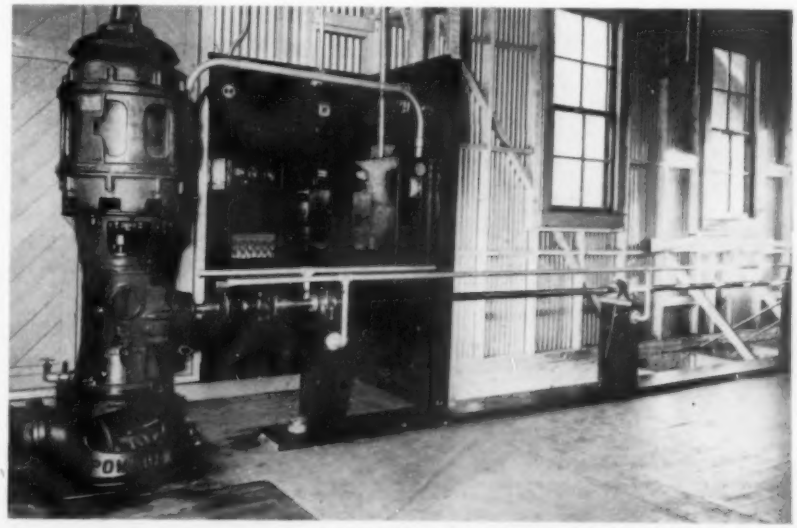
The Well System

The three wells comprising the system are located on the outskirts of the city, and all are pumped directly into mains leading to a central location in the city. The performance of the pumps is synchonized, so that in case of serious fire or emergency the elevated tanks on the system, which ordinarily govern the pressure in the mains, are disconnected, allowing the pumps to deliver direct and under increased pressure to that area of the city requiring temporary high-pressure service. Normally the three Pomona pumps installed in the pump houses are automatically operated with electric power, with the control equipment installed in the City Hall at some distance from the pumps. Tell-tale lights on the control panel indicate the exact water level in the elevated tanks, and also show the pumps which are in operation.

The three units comprise one 60-hp 1,300-gpm pump at the Florence Street station; one 75-hp 1,400-gpm pump at the Marshall Street station; and one 50-hp 1,000-gpm pump at Crane Park; with a combined delivery of approximately 5,000,000 gallons daily against a normal main pressure of 50 pounds. All of these units operate at slow speed, maintaining an over-all efficiency of approximately 70 per cent.

Well Drilling

The wells in which these pumps were installed were drilled by crews and equipment of the Turlock Irrigation District, under specifications differing radically from accepted drilling methods. The wells were developed by air equipment with gravel walls. The surface water was cased off, and the supply obtained from deep stratas. A central well, 18 inches in diameter, was drilled to the required depth to accommodate the permanent pump installation. Approximately 6 feet from the well on either side, 8-inch-diameter wells were drilled to the same depth. With the air pumping equipment in operation, removing sand in large quantities, coarse gravel was fed into the auxiliary wells, requiring from 50 to 60 cubic



The 1,400-gpm Pomona Pump at the Marshall Street Station, Turlock, Calif., Showing the New Drive Shaft from the 100-hp Gas Engine Standby

Lithographed on stone by Edward A. W

At the close of a year in which our facilities have largely been devoted to filling orders for direct and indirect requirements of the United States Government for National Defense, we wish to express our appreciation of the forbearance of those of our customers whose orders were consequently delayed.

UNITED STATES PIPE & FOUNDRY CO., General Offices, Burlington, N. J.

Makers of Centrifugally or Pit Cast Pipe for water works, gas, sewerage, drainage and industrial services

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cast iron
PIPE

yards of gravel for each of the auxiliaries. By this method of development, clean wells of adequate capacity were easily obtained.

The working out of the new operating system was accomplished through close cooperation between the city government and the underwriters in the Turlock territory. A continued reduction of insurance rates in the area affected has been the logical result, as well as decreased plant operating costs. Under the conditions of the original manual set-up, five operators and maintenance men were on the city payroll during the entire year. Now, with automatic operation, one man, sitting at a desk in the City Hall, controls the entire system dividing his time between being desk sergeant for the police department and operator of the entire water pumping system.

Neighborhood Redevelopment

(*Continued from page 39*)

blighted areas can afford. Only very low income families are eligible for public housing projects, and there remains an in-between group for which the only homes now available are in existing structures. If this group is to be provided with better dwellings, there would have to be either extensive remodeling of old structures or new homes built through some type of governmental collaboration with private enterprise, which has still to be explored and given legislative form.

"The present system of priorities of materials may seriously affect the amount of building construction that can be undertaken in Chicago during the war. It is hoped, however, that redevelopment corporation projects will be granted priority within the framework of the defense housing program. Regardless of the extent to which this hope can be realized, a program must be defined, standards established, and planning done now, in order to have a reserve of large-scale work ready to throw into gear at the close of the war. Whatever the period of international warfare may bring forth, Chicago must not neglect to plan for peace.

"Although the rebuilding of the blighted areas represents one of Chicago's major problems, there are many other phases of urban economy which require simultaneous study. The Chicago Plan Commission is preparing reports dealing with population growth and problems; industrial and commercial trends; and the major concept of a land use master plan.

"The problems presented by the slum areas are so complex that they cannot be solved by the unaided efforts of one public agency; they cannot be solved merely by 'making plans.' There must be concerted action, designed to mobilize the full resources of the police power, the taxing power, the power of eminent domain, the types of improvements, irrespective of the complications introduced by the division of these powers between many government authorities. The coordination of the efforts of the various government agencies and the efforts of private enterprise are vital to the rebuilding of the slum areas, and it is the sincere hope of the Chicago Plan Commission that 'Rebuilding Old Chicago' will contribute to this objective."

Essentials for Successful Neighborhood Rehabilitation

FOUR RECOMMENDATIONS FOR INCREASING THE EFFECTIVENESS OF HOUSING PROGRAMS are made in a report, by the National Association of Housing Officials, on "Housing in Neighborhood Rehabilitation."*

According to the report, future successful housing and reclamation of slum areas will depend upon ability to develop (1) Broad plans for land use, so that whole areas and not merely isolated projects may be planned; (2) an attack on forces drawing away from cities higher-income families, as well as industries necessary to the economic wellbeing of the city; (3) means of providing housing for all income classes; and (4) ways of enlisting direct private participation in those parts of the rebuilding process that can return a legitimate and attractive profit.

Although proof that attractive profits can be made would provide the greatest impetus for widespread large-scale housing operations by private enterprise in deteriorated areas, cases cited in the report indicate that no profits can be derived from unsubsidized housing for low-income families.

Neighborhood rehabilitation legislation enacted this year in Illinois, Michigan and New York, however, "holds promise of greater inducements to private activity than have heretofore been available," the report said. "It is perfectly clear, though, that there must be not only a more realistic attitude of government towards such private profit-seeking operations, but private capital must redefine in less extravagant terms a 'reasonable profit' in real estate development."

Among problems facing the housing officials, according to the report, are decentralization and decline of population, blighted areas, daily traffic congestion and municipal bankruptcy. Survival of the city as an economic entity, and possibly as a political entity, will depend largely upon its ability to attract and hold a population that is rapidly reaching a stable point. While neighborhood rehabilitation, building repair and remodeling are necessary to supply one part of the low-cost or low-rent market, they are equally important as a means of creating an environment that can compete successfully with the "lures of suburbia," the report said.

Rehabilitation of neighborhoods will not be most effective, according to the report, unless more is done than simply rebuilding an area. Causes of deterioration, other than age and obsolescence, must be studied. If decentralization of population is caused by failure of cities to provide a satisfactory environment for family life, the wants and needs of these families must be restudied and something acceptable offered them.

"It has become too easy to label an area a slum and then buy it out with Federal money, thereby placing a value on buildings whose use for dwellings or even whose mere existence constitutes a gross violation of existing official standards. An equal amount of time and money expended in the improvement and enforcement of building, health, fire, zoning and housing ordinances, and the adoption of reasonable minimum housing standards and sufficient rent budgets for families receiving direct public relief, would spread the benefits of improved housing more widely than they will be distributed for many years by the operation of the public housing program in its present form," the report said.

* See page 39 of this issue.

NATIONAL WATER MAIN CLEANING and its relation to DEFENSE ACTIVITIES At CAMP LEE, VA.

"Your cleaning of this 16" main," recently wrote Whitworth Cotten, Acting City Engineer of Petersburg, Va., "has enabled us to furnish nearby Camp Lee with water until we complete a new line paralleling this main."

HERE IS A GOOD IDEA for Any City:

WHETHER your City is threatened with water shortage due to the proximity of an army camp, naval or airport base or large defense industry, or is merely looking ahead to a time when a larger water supply will be needed, take this preliminary step for economy's sake:

Before launching an expensive program of expansion, make sure your *existing* mains are in condition to deliver their maximum capacity. If some of the mains are found to be clogged, have them cleaned and restored to their original capacity* by the efficient, economical NATIONAL METHOD.

Results of the Main Cleaning at Petersburg, as Told by Mr. Cotten:

BEFORE CLEANING

"Before cleaning, this line delivered by *gravity* 1,800,000 g.p.d. with a loss of head of about 3 feet per thousand and a resulting coefficient "C" of approximately 70."

"Before cleaning, this line delivered by *pumping* 3,750,000 g.p.d. with a loss of head of about 12 feet per thousand, with a resulting coefficient "C" of approximately 70."

AFTER CLEANING

"After cleaning, this line delivered by *gravity* 3,200,000 g.p.d. with a loss of head of about 3 feet per thousand, with a resulting coefficient "C" of approximately 125."

"After cleaning, this line delivered by *pumping* 6,100,000 g.p.d. with a loss of head of about 9 feet per thousand, with a resulting coefficient "C" of approximately 125."

*Cleaning Water Mains by THE NATIONAL METHOD restores clogged mains to at least 95% of their original carrying capacity. *Let us know if you would be interested in our making a preliminary investigation of your distribution system without cost to you.*

THE NATIONAL WATER MAIN CLEANING COMPANY

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30 Church Street **New York, N. Y.**

Multiple-Floor Plant of Yankton Water Works

South Dakota City of 10,000 Clarifies and Purifies the "Big Muddy" in Well-Designed Hillside Plant

BUILT on the banks of the Missouri River, the boundary of South Dakota and Nebraska, the pumping and filtration plant of the city of Yankton has two floors for pumps, another for filters, and a fourth for chemical equipment, office and laboratory. Recent revisions in the original plant have improved both the operating characteristics and the quality of the water.

The River Intake

The intake in the Missouri River consists of two 14-inch pipes run out 15 feet into the river along the bottom, mounted on concrete pedestals and tied together. They deliver the water to the low-lift pumps, located in what might be called a sub-basement of the plant, but outside of the main structure, closer to the river.

Low- and High-Lift Pumping

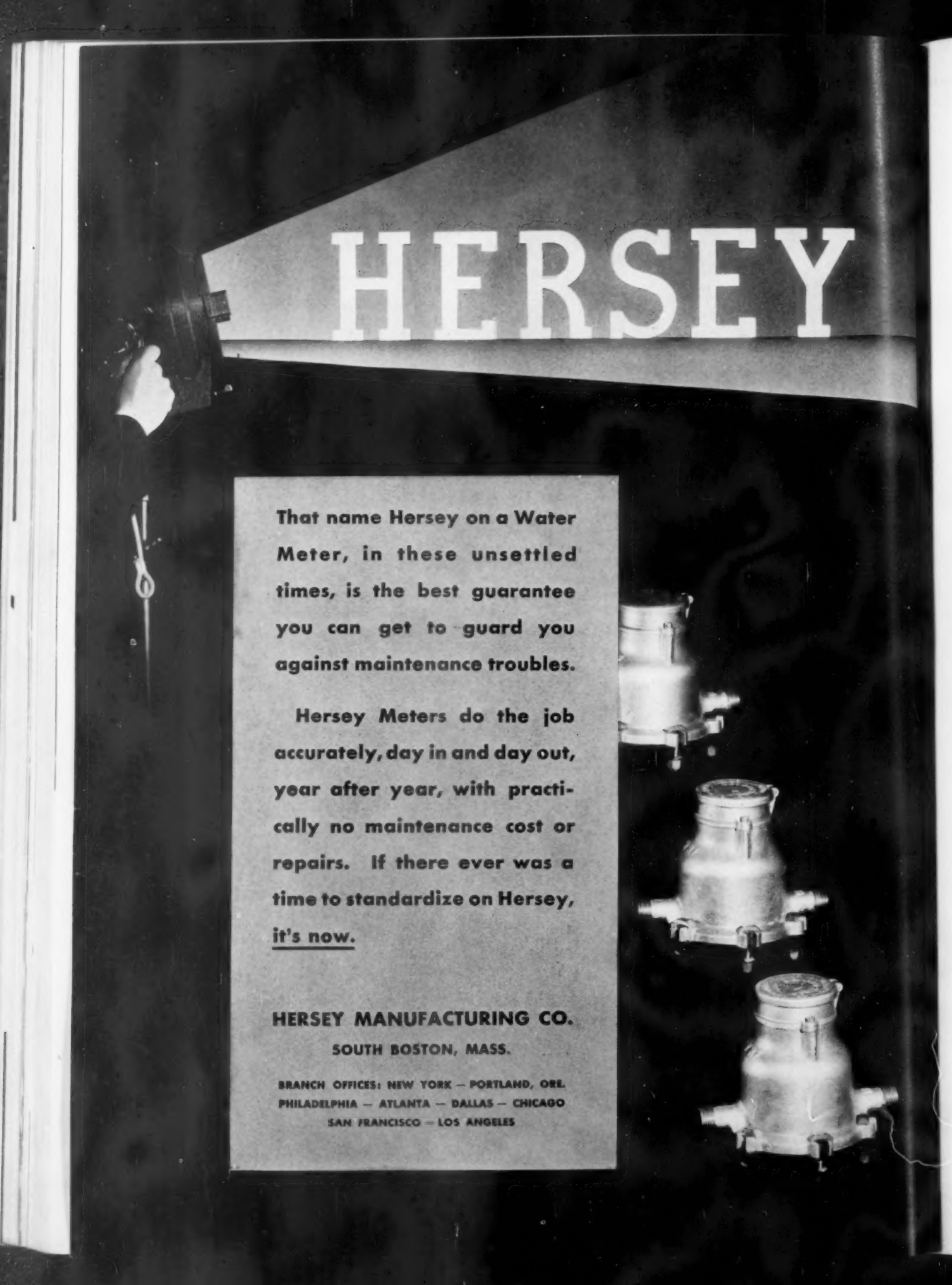
The low-lift pumps are at about 12 feet above normal river elevation, and are so arranged with piping and valves that either of the three 1,200-gpm Fairbanks-Morse pumps with F-M 20-hp motors can pump from either of the two river intakes. An auxiliary intake extended to the water's edge and blinded is available should anything happen to the other two intakes. A quick hook-up could be made. The discharge from the low-lift pumps is recorded by a Republic indicating, integrating and recording flow meter which is checked every 24 hours. A gas unit heater is installed in the low-lift pump room to maintain a temperature of not more than 50 degrees in the pump room at all times.

The high-lift pump room is the basement of the main building, and houses three Fairbanks-Morse pumps and motors that deliver the filtered chlorinated water to the city distribution system. The pumps comprise a 500-gpm unit with a 50-hp motor, a 750-gpm unit with a 60-hp motor, and a 1,200-gpm unit with a 75-hp motor.

Chemical Treatment

The chemical treatment of the water is complete and well directed to furnish the maximum clarification and bacterial purity. A dry feed machine is installed in the low-lift pump room to apply 17.1 ppm of alum to a solution pot which delivers it to the suction side of the low-lift pumps. This treated water is pumped through a 12-inch cast iron line to a primary settling basin outside the plant, where the water has a 1½-hour detention period at normal operation. The primary sedimentation basin is cleaned every two weeks when the river is high, and when it is normal the cleaning is only monthly. This basin absorbs most of the turbidity in the raw water.

The East Side of the Yankton, S. Dak., Water Filtration Plant, with the Missouri River at the Left


HERSEY
That name Hersey on a Water Meter, in these unsettled times, is the best guarantee you can get to guard you against maintenance troubles.
Hersey Meters do the job accurately, day in and day out, year after year, with practically no maintenance cost or repairs. If there ever was a time to standardize on Hersey, it's now.
HERSEY MANUFACTURING CO.
SOUTH BOSTON, MASS.
BRANCH OFFICES: NEW YORK — PORTLAND, ORE.
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SAN FRANCISCO — LOS ANGELES

From the primary settling basin the water flows to the chemical mixing chamber inside the plant, where two Municipal Service Co. dry feed machines add lime at the rate of 154 ppm to the water, and an Infilco dry feed machine applies sodium aluminate at rates varying from 12.8 to 17.1 ppm. The mixing chamber is equipped with paddles on a vertical shaft to give a preliminary quick mix to the water before it flows to the two coagulating basins located underground at the front of the plant, which are operated in parallel, giving a detention period of only about 35 minutes. These basins are cleaned twice a month when the river is very turbid, otherwise at less frequent intervals. Hopper bottoms, recently installed in these basins, greatly facilitate cleaning. These basins were formerly cleaned very frequently, but the recent reconstruction of the plant included the primary settling basin which now carries most of the load.

As the water flows from the coagulating basins to the filters, it is treated with chlorine and ammonia at the rate of 12 pounds per million gallons of chlorine and 4 pounds per million gallons of ammonia. The flow in each case is controlled by a Wallace & Tiernan machine, and the chlorine cylinders are checked regularly on a Fairbanks platform scale.

Filtration

The plant is equipped with three rapid sand filters having a total capacity of 2 mgd. They have concrete perforated underdrains overlaid with 8 inches of coarse gravel, 15 inches of fine gravel and 30 inches of sand. There are three concrete wash-water troughs extending from front to back of each filter. The operation of the filters is controlled and checked by Simplex rate-of-flow controllers and loss-of-head gages. The filter runs average 34 hours throughout the year, and are slightly shorter in winter owing to the higher viscosity of the water.

Water for washing the filters is delivered from the clear well by a 1,200-gpm Fairbanks-Morse centrifugal pump driven by an F-M 50-hp motor giving a vertical rise of wash water of 24 inches per minute.

Other Plant Data

The city of Yankton has a population of approximately 7,000; and in addition the municipal water works supply the State Hospital located just north of the city, so that the actual population supplied is around 10,000. The water consumption is about 800,000 gallons daily during hot summer weather and an average of 500,000 gallons daily throughout the year. The city is 100 per cent metered, as is also the supply to the State Hospital.

On the first floor of the building at ground level is the operator's office and a laboratory with an entry to the filters at the west end. In the office is a Bristol recording liquid level gage connected to the 300,000-gallon elevated storage tank on a hilltop ½-mile from the plant. To the east of the plant is a 300,000-gallon clear well which also serves as a reserve. In the office is a Foxboro recording gage on the clear well and a Darley electric alarm with high and low telltales. This is used primarily as a pressure gage, the pressure being maintained around 60 pounds at the plant. An Anderson relief valve on the discharge line where it enters the distribution system is set at 60 pounds to safeguard the system should the elevated storage be under repair. A Rusta Restor cathodic protection system is installed on the elevating tank to prevent corrosion of the tank and prolong its life.

The raw water of the Missouri River has a soap hardness of about 137 ppm, while the finished water delivered to the city has a hardness of only 74 ppm, since the lime treatment has considerable softening effect.

The City Water Department experienced considerable trouble in the winter of 1936 when many of the domestic services were frozen because of the unusually deep penetration of the frost. Much of this was occasioned by utter disregard of the mains and services when new pavement and street improvements were under way. These troublesome services were checked and relaid at a greater depth, and no further trouble has been experienced.

• • • —

Revolutionary Changes in Building Design Predicted

REVOLUTIONARY changes in building design, following the war, are predicted by Harvey Wiley Corbett, of New York, Fellow of the American Institute of Architects. Speaking before the Construction Industry Conference of the Chamber of Commerce of the United States, in Washington on November 6, Mr. Corbett declared that "the demand for rapid defense production will demonstrate the economy of mass production of building elements, completely finished in the factory, rapidly assembled in the field and 100 per cent demountable, so that we will not be saddled with ghost cities, as we were after the last war."

What to do, after the war is over, with buildings erected for defense was answered by Mr. Corbett as follows:

"Plans should be made now to turn these great military factories into the production of inter-locking, inter-changeable, standardized, completely finished building units, from which needed buildings for peace-time activities can readily be erected. If plans are properly made, the shift could be made almost over night. Our government, of course, should be ready to spend what is necessary to prepare for such a transfer."

End of the era of skyscraper construction was predicted by Mr. Corbett:

"The future of building as I see it is no more skyscrapers. They are not a necessity from any point of view. If we are bombed tomorrow a four- or five-story city would be safer than one having a lot of skyscrapers. I have changed my mind about skyscrapers.

"Future buildings will weigh about one-third what they do now. Masonry, as we know it, will not be used. Walls three or four inches thick are sufficient to divide indoors and outdoors. Synthetic materials will be used. Buildings will quickly be put together. They can be taken apart with equal rapidity. Changes in arrangements must be made. We shall cease to think of buildings as permanent structures, but will conceive of them as we now do motor cars, so flexible that they can be readily changed to meet changing human needs. They must not be built, as in the past, of great and unnecessary masses of solid masonry, which would fill the streets with rubble if bombed as in London raids. Masses of masonry are unnecessary and are an uncalled for expense in time and labor.

"Let us try in future to make our buildings meet our human needs, designed for human use, instead of being dead and static. They must be alive and dynamic."

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BADGER *Water* METERS

P&H Shovel With 1¼-Yard Snow Bucket

An Adams Grader Windrowed the Snow

Alpena, Michigan, Shovels Out the Ice

Unusual Ice Conditions of Last Winter Overcome with Grader, and a Snow Bucket on Power Shovel

By A. M. HOPPERSTEAD
City Manager,
Alpena, Mich.

AFTER the first of January, 1941, Alpena experienced an unusually large amount of snow; and, in compliance with good practice, the snow-plow trucks and Adams power grader were started out with the storm plowing the streets clear. As soon as this phase of the work was completed, it was necessary to remove the snow which had been windrowed to the gutters, especially in the business area. This was done with a Snogo that was available, but the storms were quite general and the Snogo was not available at all times when the city needed it. One difficulty experienced with the loader was the breaking of safety pins by ice getting into the fan. It is our experience that ice will form from the traffic, in spite of anything that we can do; and replacing safety pins at sub-zero temperatures is difficult.

A Harnischfeger snow bucket was then purchased for the city's ⅜-yard P&H shovel. Then following a storm and after traffic had compacted the snow, we used the Adams grader to blade it in and loaded it immediately into trucks with the P&H machine and snow bucket. The windrow is maintained ahead of the shovel with the grader. Our experience last winter showed that the city was well justified in its purchase of the snow bucket, for it greatly aided in improving winter driving conditions.

The shovel and snow bucket were used throughout the city where conditions warranted, such as at street intersections, church approaches, funeral locations, or wherever large snow accumulations created traffic hazards. Then, when the spring break-up occurred, the gutters were clear and ready to take away the water, which greatly assisted in keeping maintenance costs low. With the shovel and snow bucket, it was possible to load approximately 4 yards of material in one minute.

• • • —

Buffalo Committee to Study Post War Financial Problems

IN BUFFALO, the President of the Common Council has appointed a Special Committee on Post-War Financial Problems, consisting of the following members: Councilman E. F. Tommy Hughitt, Chairman; and Councilmen James L. Crane, John A. Ulinski, Harry C. Vackel, and General A. Whalen. This was done at the recommendation of Frank M. Davis, Comptroller, who filed with the Council the message condensed here:

Buffalo should now prepare for peace instead of drifting into the vexing problems which will then inevitably arise. Some of the problems which should now be receiving attention are:

(a) The effect upon assessable values of cessation of defense activities.

(b) The handling of Buffalo's defense workers when their employment ceases.

(c) The effect of the mushroom real estate developments outside of the city limits. Buffalo pays the lion's share of Erie County taxes—and under existing laws shoulders the burden when properties outside of the city fail to pay taxes.

(d) Who will support the defense housing projects when defense is no longer the excuse for unlimited expenditures?

(e) When the Federal Government stops pouring money into our local educational system what disposition is to be made of the teachers now employed in defense training and can the public be weaned away from this new departure? Extensions of public service have a way of clinging on tenaciously when once started.

(f) Who will support the thousands of Buffalo boys now in the service when they return and find themselves without employment? Or if they are given their old jobs what will happen to the workers displaced on their return?

(g) Can local industries be persuaded to keep in the Buffalo section that portion of their activities which will survive peace? Some community must be selected for this residuum of work. It can be Buffalo if Buffalo starts thinking about it now.

DEFENSE won't wait for weather!

• *Under a scorching sun this "Caterpillar" Diesel No. 12 Motor Grader windrows dirt for airport construction at Felton Field, Pensacola, Florida. Dual engine cooling keeps both water and oil at the proper temperature.*

IN THE first nine months of 1941 the men and machines of America's earth-moving industry have dug, scraped, hauled and bulldozed more than 800,000,000 cubic yards of dirt and rock—all on defense work!

The fact that much of this immense yardage has been handled under the toughest kind of conditions is a tribute to the rugged power, traction and stamina of "Caterpillar" Diesel Tractors and Motor Graders. These sturdy machines ask no favors of terrain or weather. In deep, soft mud, on sun-baked clay or frozen ground, they come out slugging, right from the bell.

The broad steel tracks of a burly "Caterpillar" Diesel Tractor furnish solid footing for its tremendous engine power, and the final drive is protected from mud, water and grit by copper bellows-seals. Balancing engine weight over the drive wheels gives a "Caterpillar" Diesel Motor Grader its unbeatable tractive power. Both machines start fast and run smoothly whether the temperature is zero or 100. And both operate with better-than-average Diesel economy because they use the cheaper grades of fuel.

• *At the U. S. Army Proving Grounds, Aberdeen, Maryland, a "Caterpillar" Diesel D7 Tractor with LaPlant-Choate bulldozer works in heavy March mud.*

Most important of all, *they're built to stand up under punishment*—to work day and night, month after month, with a minimum of lost time.

Every minute counts in the present emergency, and "Caterpillar" dependability has a vital part in licking America's biggest job.

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DIESEL

ENGINES AND ELECTRIC SETS

TRACK-TYPE TRACTORS • ROAD MACHINERY

Oklahoma City Water Supply

(*Continued from page 61*)

The rental proposal of Cole, Carley & Hudkins, an Omaha, Nebr., contracting firm, was accepted. They guaranteed to furnish equipment capable of moving a minimum of 20,000 cubic yards of dirt daily at rental cost of $477,000, plus freight costs of delivering it to the job. They further agreed to maintain the equipment for $145,000—an average maintenance cost of 3½ cents a cubic yard of dirt moved.

Total cost of the equipment was thus fixed at $637,000—an average cost of 15 cents a cubic yard for the dirt to be moved.

On the basis of Bailey's estimate of 30 cents a cubic yard over-all cost for moving the dirt, he expects the remaining 15 cents a yard to take care of fuel and lubrication expense, labor, supervision and accounting costs connected with that portion of the work.

There will be no compensation insurance premiums to pay, since the city is carrying its own insurance on laborers. No person is hired for any job on the work done by the city unless he first passes a rigid physical examination given by specially appointed doctors.

So the dirt-moving job, including canal excavation and compacting the earth in the dam, has been set at $1,200,000 by the city, compared to the bidder's price of $2,064,300.

Advertise for Bids

Private contractors might be expected to resent this trend of events, but Bailey did not wait for that issue to be raised.

"The city will not undertake to build any unit of this work without first taking bids from private contractors," he announced at the outset. "If we get the kind of prices we expect, we'll award contracts. If not, we'll do the work ourselves."

Acting on that policy, he advertised for bids on concrete in place for five bridges, a spillway, a double 7 x 7-foot monolithic concrete siphon to carry water in the diversion canal beneath a four-lane U. S. highway, and a 6 x 7-foot structure with inlet tower to take water by gravity from the new reservoir to the new filtration and pumping plant.

The city estimated it could buy sand, cement and rock, and put the concrete in place, for $14 a cubic yard. The best bid received was $16.50. Bailey ruled the bid price was based upon a legitimate profit, and the contract was awarded.

At present when bids are invited, material dealers sharpen their pencils in quoting to contractors or to the city; contractors are shaving their costs; Oklahoma City is getting a water supply, and the cost is running within the bond issue budget.

Even organized labor was interested in the bold step taken by the city. Business agents of labor unions of course desired to maintain a strictly unionized organization on the job. They had done so on other projects, particularly on defense construction, virtually excluding non-union skilled workmen from them.

"But this job is set up simply as another city department," said Bailey. "The bond issue money is everybody's money. We can't discriminate. It's neither a closed shop job nor an open shop job. It's a water supply."

The unions got the point, and are cooperating.

The Result

When completed, next summer, the new reservoir will hold 25 billion gallons of water in addition to the 6 billion gallons storage capacity of the city's present reservoir, Lake Overholser.

The new filtration plant will provide 40,000,000 gallons a day in addition to 32,000,000 gallons which the present filter plant will deliver after it is modernized in the water improvement program.

The new pumping station will have capacity for a daily load of 45,000,000 gallons with stand-by units for 20,000,000 gallons more, in addition to present pumping facilities for 54,000,000 gallons a day.

A lime-soda softening plant with rapid sand filters and automatic chlorine feeder and recorder will give Oklahoma City water of uniform quality, reduced in hardness from 125 parts per million gallons of raw river water to an estimated 85 parts per million gallons.

And in that happy day city officials no longer expect to be embarrassed by having their water supply branded contemptuously as a "mudpuddle."

Omaha's Singing Tower

THE SINGING TOWER OF OMAHA, NEBR., particularly beautiful at night when illuminated by floodlights, is located on an eminence overlooking the city to the east and the surrounding countryside beyond. Its sacred concerts attract thousands of music lovers every year. Music, originating by radio pick-up, transcription, or actual singing in the organ-equipped studio within the tower, is carried out to listeners by eight dynamic amplifiers.

The tower was built by the West Lawn Cemetery Association of Omaha, at a cost of $7,000, and is owned and operated by that Association, for the benefit of the public.

It was designed by F. A. Henninger & Son, Omaha architects; and is patterned somewhat after the famous Bok Singing Tower at Mountain Lake, Fla.

WILL HATTEROTH.

Striking View of the Singing Tower at Omaha, Nebr.

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IN the minds of city officials who have had experience with Karpark Automatic Parking Meters this name is synonymous with **INTEGRITY • SUPERIOR ENGINEERING *and* DEPENDABLE TROUBLE-FREE PARKING CONTROL.**

IF your city wants the best parking meter which, in the long run represents the smallest expenditure, write to the Karpark Corporation and detailed information will be immediately forwarded.

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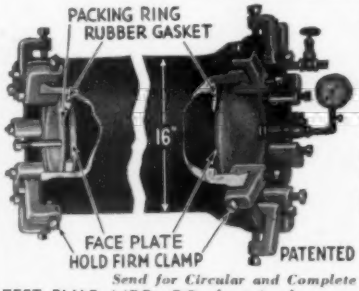

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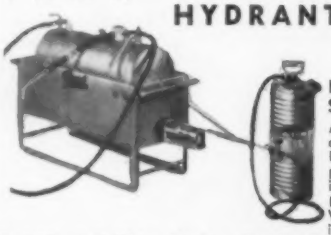

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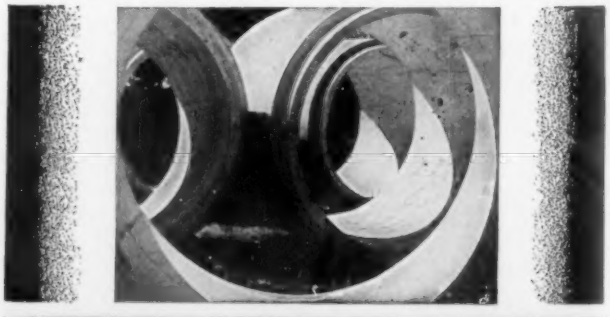

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PRESSURE • SUBAQUEOUS • SEWER • CULVERT

New Sewage System Duluth

(*Continued from page 53*)

rest of the dried sludge is fed to the incinerator by means of a screw feed at the top of the furnace. As it is delivered to the furnace it is surrounded by combustion air, and immediately below that a burner supplied with sludge gas maintains combustion for the dried sludge. The ash resulting drops to a sump and is pumped out onto the adjacent marsh for final disposal. There is a fly-ash connection from the combustion chamber to the stack, which removes the very fine ash which will not settle into the sump. A 15 x 15-inch connection from the combustion chamber supplies hot gases to the flash dryer.

Miscellaneous Data

In the Superintendent's office on the first floor of the main building are two large dials showing the rate of flow of raw sewage and the air flow rate. These Builders-Providence dials are duplicated at the air meter and in the other office in the sludge-disposal building.

In the main building is a three-car garage, for the storage of the superintendent's and operators' cars in winter; and in the basement is one Yeomans sump pump for taking care of seepage and leakage within the structures.

This primary treatment plant removes about 90 per cent of the settleable solids and 70 per cent of the suspended solids.

Both buildings are heated by unit heaters, and the floors throughout the main building and around the incinerator in the sludge-disposal building are of open welded grating, making for cleanliness and ventilation.

Personnel

The new sewage-treatment plant for Duluth was designed by Hitchcock & Estabrook, consulting engineers, of Minneapolis, and is operated under the direction of Earnest A. Bodin, Commissioner of Utilities, by M. A. Lubratovich as Superintendent. All construction was completed under the Public Works Department, of which F. L. Daugherty is the present Commissioner. The Eimco dewatering equipment was furnished by the Eimco Corporation, Salt Lake City, Utah, and installed by M. M. Kaiser. The Raymond flash dryers were supplied by the Combustion Engineering Corporation, of New York City, and installed by Philip Davidson, of the Chicago office. A. Hedenberg, Inc., was the general contractor.

Cooperative Housing for Defense Workers

A cooperative housing plan for defense workers, designed to provide homes at moderate cost for families with incomes between $1,200 and $1,800 a year, was announced on November 14 by Charles F. Palmer, Coordinator of Defense Housing.

Under the plan, groups of workers may organize cooperatives and apply to the Federal Housing Administration for mortgage insurance under Defense Housing Title VI, which permits insurance up to 90 per cent of appraised value.

Cooperatives will employ their own architects to select sites and prepare plans. Groups of individual homes are contemplated, no multiple-unit housing.

Street-Paving Program

(*Continued from page 48*)

be renewed or new services installed complete to the curb before any paving is started.

In the paving program which started in 1940, and is still continuing, the city has already laid 15,300 square yards of 8-inch reinforced concrete pavement, 20,400 square yards of stone-filled asphalt pavement on either penetration macadam or concrete base, 10,200 square yards of base and 8,000 feet of concrete curb.

Paving operations are under the direction of Ralph D. Klebes, City Manager, with Abe L. Oppenheim as Chief, Bureau of Engineering in Charge of Paving.

Asphalt Paving by Night

(*Continued from page 59*)

ways, and again between the medium and heavyweight rollers, so that any low spots or high spots will show up quickly and can be taken care of while the pavement is still hot.

The paving operations on Main Street, as well as on the cross-streets as the program continued with the removal of street-car tracks, were under the direction of William H. Roberts, Commissioner, Department of Public Works, with Edwin A. Miller, Superintendent of Maintenance, Division of Maintenance and Operation, handling both the preparation and the paving operations.

Refuse-Handling Studies

(*Continued from page 43*)

After an exhaustive study of this subject, the Michigan Department of Health reported: "We strongly recommend that the city procure the necessary equipment and perform the service under the direction of a superintendent who is held strictly responsible for satisfactory and economical results."

It is generally accepted throughout the township that the collection of waste material during the past ten years with township forces has been very satisfactory. The service is excellent, and the unit costs have decreased in spite of increased rates for wages.

—Lower Merion Township, is located in southeastn Pennsylvania and adjoins Philadelphia on the west. From a paper presented at the 1941 Convention of the Pennsylvania State Association of Township Commissioners.

MINNEAPOLIS REORDERS DUAL AUTOMATIC METERS!

Minnesota City Expands Its Metered Area By Adding 400 Meters to the Original 1,100

ON THE basis of operation and experience, Minneapolis is expanding its metered area by ordering 400 additional DUAL AUTOMATIC METERS. Proof again that DUAL AUTOMATIC METERS are the most satisfactory answer to the parking control problem. So far in 1941, DUAL has received 46 initial awards and 39 reorders — a total of 85 awards in 10 months!

What DUAL AUTOMATIC PARKING METERS have done for other cities, they can do for your city if you have a traffic problem.

The Original CARL MAGEE METER . . . Licensed under Vehicular Parking, Ltd.

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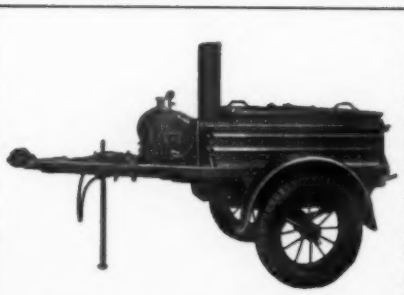

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VALVES COMPLETE EQUIPMENT FOR WATER WORKS FILTRATION AND SEWAGE DISPOSAL PLANTS

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Moving Defense Goods Through City Streets

ALL THE nation is striving to increase defense production. Preferred delivery of essential materials is being guaranteed to manufacturers who are building for defense. Every effort is being strained to insure a steady flow of raw materials into the factories and finished goods from the shipping platforms.

Municipalities throughout the nation are finding new problems of management arising from the rapidly expanding defense manufacturing plants; problems of housing; of furnishing labor; and of preventing the new and expanded plants from disrupting the daily life of the community.

Fully as important as housing the workers is the problem of moving the traffic that flows to and from each defense plant. Government assistance has been given to roads leading to new plants, and many communities have been called on to widen streets and divert ordinary traffic so that the business of building for defense may continue uninterrupted.

Trucks Move Materials

Many raw materials are being shipped by rail, but a large volume of increased truck traffic has also resulted. In all parts of the country the trucks are on the streets and highways, thousands of them hauling tank wheels, carbons for gas masks, propeller shafts, motors, paint, airplanes, cloth for uniforms, valves, air compressors and food supplies. This increase in trucks moving materials, added onto the volume of motors used for the transportation of workers along the streets and highways, has created traffic problems in almost every city where defense manufacturing is booming. According to city officials, these porblems are caused by two factors: first, the increased number of vehicles engaged in defense transportation, and secondly, the increased size of the trucks and trailers being utilized.

Defense production has put a heavy responsibility on the motor-transport industry, as an official of the Fruehauf Trailer Co. pointed out in a recent interview, wherein he said that in many cases motor transportation is faster than the United States mails, and considerably more efficient than other forms of transport because of its flexibility as to volume and efficiency in following the most direct routes.

In an endeavor to find out what traffic devices and vehicles speed up defense transportation, THE AMERICAN CITY listed the ten below and asked authorities of representative cities to number them in order of importance.

Traffic signs
Stop-and-Go traffic signals
Street lights
Motorcycles
Parking meters
Pavement markings
Police cars
Trolley cars
Trolley coaches
Buses

How would you number them for your city?

Lowering Cost Per Ton-Mile

In an effort to bring motor-transport costs even lower than they are at present, equipment is being planned that will give greater load capacity.* According to a recent ruling of the Interstate Commerce Commission, such equipment will reduce per-ton operating costs, particularly the cost of man power, which is rapidly becoming an important factor.

Manufacturers are cooperating in every way possible to meet this demand. The Heil Co. offers 4,000-gallon fuel bodies and 13 ½-yard dump trucks; Mack and GMC are selling 45-ton trucks, and Ford offers a new engine and three standard engines with added power. Gross ratings for the new Reos have been increased 1,000 pounds, ranging to 33,700 pounds, and 68,000 pounds for trailer and tractor combinations. W. J. O'Neil, President of the Dodge Division of the Chrysler Corporation, recently said, "We also announce more powerful trucks," and practically every other maker is already in line to furnish highway-transport bodies that will be bigger than those normally used in the past.

Already there are more than 2,500,000 heavy and medium trucks rolling on the streets and roads.

Transportation by motor trucks was already growing rapidly before there was expectation of war preparation. Now the Priorities Division estimates 4,500,000 trucks on the road, with 1,125,000 of them hauling defense commodities. Every Federal encouragement to growth is being given this vast trucking industry, whose mammoth vehicles mix with the automobiles, buses and electric cars carrying the people. A blanket order favors raw-material deliveries to manufacturers of heavy (10½-ton up) trucks, trailers and buses. As this is right and necessary, the first problem of the city governments is to help this stream of trucks through or around the outskirts of the city with least delay. From 10 to 50 per cent of these loads are defense goods, so facilitation is the word and the deed, especially as no limitations are likely to be placed on the production of heavy trucks.

Restricting Trucks to Certain Streets

While the majority of large cities prohibit trucks from boulevards and parkways, a Milwaukee study reveals that a number of the cities have designated truck routes. Los Angeles since 1930, and St. Paul since June, 1941, have comprehensive traffic-route

* Typical of the trend to heavier service are the new accessories and parts developed for the defense tempo, of which several are mentioned here. Firestone announces a new Duraflex transport tire which has withstood test runs of 11,000,000 miles. B. F. Goodrich Co. has created Duramin, a combination of chemical age-resisters intended to keep rubber tough and alive. Ahlbug Bearing Co. offers a streamlined unit for packing grease into bearings 1½ to 7 inches in diameter. Walter S. Rockwell, President of the Timken-Detroit Axle Co., says, "So-called substitutes in many instances are proving superior to materials formerly considered essential," and cites the new Axaloy steel which stands tests equivalent to 100,000 miles of axle-shaft service.

PROTECTION that PROTECTS!

The money you spend in Buffalo-made meters is investment money—that is, you expect it to earn important savings for you in longer lived service and freedom from maintenance expense. And that's just what happens, because of the many protection features engineered into whatever Buffalo-made meters you select.

Take the submerged working bearings for example—they're all *protected* against wear and loss of earnings from sand and sediment.

Or the hard rubber measuring disc, extra thick for finer sensitivity and full revenue, and reinforced against breakage.

Or the simplicity of design and assembly, that protects you against high maintenance costs.

And there are many other Buffalo-engineered protection features you should know about before placing any meter order. A word, by mail or wire, will bring the complete facts.

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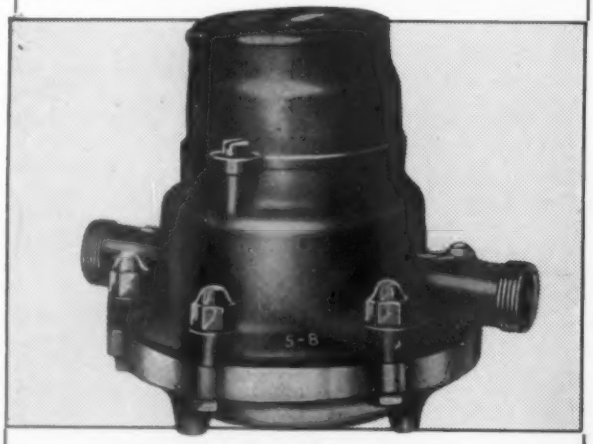

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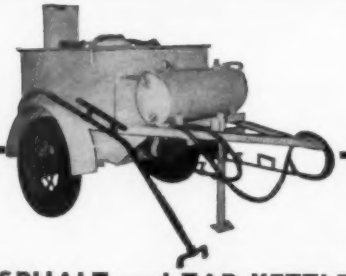

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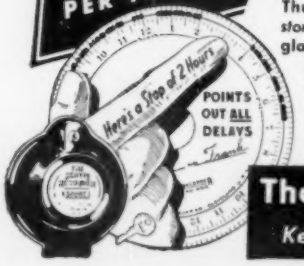

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The Servis Recorder
Keeps Motor Trucks Busy

During December we hope you will remember to mention THE AMERICAN CITY.

systems. All that is necessary is the installation of suitable signs, and the advantages are better organized traffic and less noise. A limited number of truck routes are specified by New York, Chicago, St. Louis, Boston, Pittsburgh, San Francisco, Portland, Ore., and Houston. In many smaller cities, towns and villages, there is no choice but Main Street.

What can the towns and cities of the country do to assist the movement of all these goods and workers along with other essential traffic? Under any circumstances the municipal authorities would naturally desire to do this, merely to avoid traffic jams and to help their civilians in going about their business and pleasures. Obviously the only way to help is through traffic facilitation. THE AMERICAN CITY listed ten easily applied physical factors which facilitate traffic flow and asked a representative list of cities to number these factors in accordance with their experience in speeding street transportation.

Stop-and-Go signals are the most important factors in keeping the traffic flow on the move, according to the city officials responding to this questionnaire. Nineteen cities indicated their belief that this is the first essential in traffic control.

Parking Congestion

Parking meters are second in importance in keeping the highway traffic on the move.

Of the first 56 cities reporting, 11 made parking meters the No. 1 factor; five made them No. 2; five, No. 3; four, No. 4; four, No. 5; ten, No. 6; eight, No. 7; three each, Nos. 8, 9 and 10.

As one city official pointed out, any factor that relieves parking congestion, speeds up the flow of traffic. Control of parking at the curb, taking the all-day and long-period parkers off the street, and eliminating cruising to find a place to park, are the reasons given by a number of city officials for preferring parking meters. V. L. Johnson, Traffic Engineer of Cleveland, a parking-meter city, sums up the case when he says that "increased overall speeds due to elimination of double parking at congestion points," move traffic more efficiently.

Police automobiles and motorcycles for convoying troop movements were listed as the most important factor in expediting traffic due to defense, by fourteen cities, several of which emphasized the advantages of two-way radio. Five of the cities named police motorcycles as most important of all the factors.

The Nation's Production Line

The streets are considered part of the nation's production line by many city officials. As one eastern executive pointed out, "unless the delivery of parts from subcontractors is carried out efficiently, volume production suffers." A great many defense plants today depend on subcontractors for essential parts. One Brooklyn, N. Y., factory estimates that one truck load of parts for this assembly line arrives each ten minutes of the working day. In every case where subcontracting is practiced, delays on the highways may cause delays in the factory-assembly line.

The necessity of clearing up city streets for shoppers is rapidly being recognized as a by-product of defense production. Several city officials recognized the fact that increased defense employment brings more buyers to down-town districts on pay nights.

Transit

Mass transportation, including the carrying of defense workers, also was recognized. Seven cities placed buses first; Portsmouth and Norfolk, Va., and Waterbury, Conn., made trolley coaches the No. 2 factor; trolley cars were made No. 2 by Buffalo, N. Y., and No. 3 by Portsmouth, Va.

"Mass transportation, with frequent, convenient, cheap, comfortable and fast service would substantially reduce the number of automobiles containing one and two persons," says V. J. Johnson, Traffic Engineer of the city of Cleveland, Ohio, naming buses, trolley coaches and street cars Nos. 1, 2, 3 in order of importance among the ten factors which contribute most to speeding up defense transportation. Virden A. Bittgers, City Traffic Engineer of Richmond, Va., also names these public carriers as of first importance in speeding defense transportation. "There are congested locations in Richmond where each of these devices would be ranked No. 1," he says.

Street Lights

Waterbury, Conn., remarked that "better illumination tends to freer traffic flow." Latrobe, Pa., and Paterson, N. J., made street lighting the No. 1 factor; Akron, Ohio, made it No. 2; Tyrone, Pa., Mount Vernon, Ill., Nyack, N. Y., San Diego, Calif., and Wilmington, Del., made street lighting No. 4; 13 cities made it No. 5. "Street lighting will substantially reduce losses due to night accidents and increase the efficiency of night transportation," says Cleveland.

All these devices and vehicles are clearly items in national defense. What kind of defense measures would omit the close and efficient regulation of local and through traffic? What kind of defense would permit blocking of curbs, double parking, and wasting of gasoline, time and street space in cruising needlessly? Dim streets with abnormal traffic? Too few radio equipped motorcycles to take care of busy intersections improperly signalized? A deteriorating mass-transportation system following years of urging for improvement and just when improvements are coming and when the more transit riders the better?

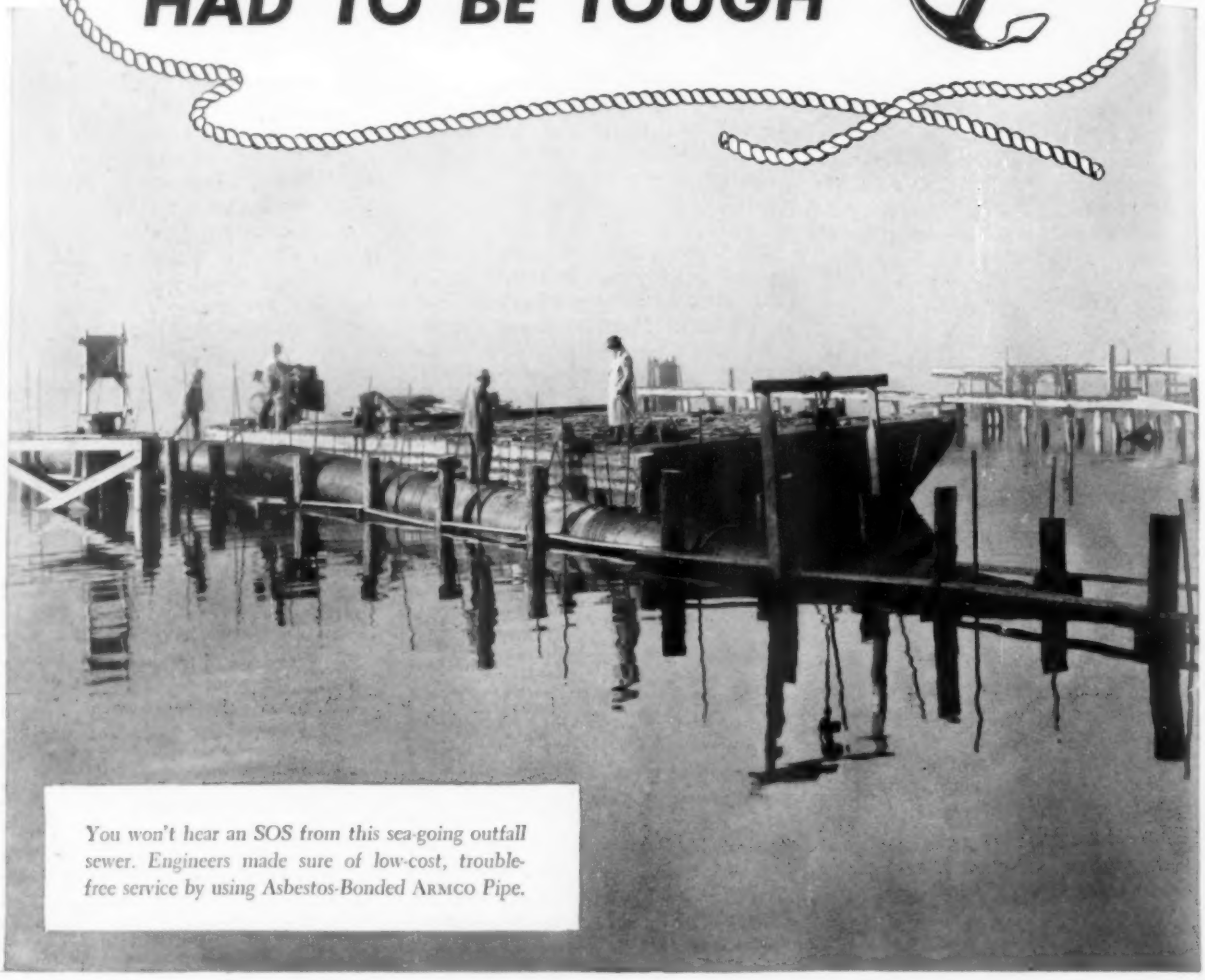
The Federal Government undoubtedly recognizes the essential character of the devices, vehicles and factors here named. Fortunately the volume of this equipment is only a brush stroke of the defense picture, so that the release of the limited amount of materials necessary for their production would yield large defense benefits.

"Let there be trucks!" ordains Roy H. Compton of *Motor Transportation*. Make no mistake about it; if you haven't noticed the prevalence of trucks, you will. The best contribution which the municipalities can make to all these and more motor-transport trucks is to take 'em in their stride. To do this, every town and city must be encouraged to equip (1) its arteries and business thoroughfares with parking meters, traffic signals and signs, street lights; (2) its police with radio motorcycles and cars; (3) its local passenger transportation with modern buses, trolley coaches and street-cars. These devices which facilitate the deliveries of defense materials to factories, plants terminals, and users would appear to be in the same priority category as the trucks which deliver the goods.

So much for the importance of these devices in speeding up transportation in the defense-production areas. They are essential for this purpose alone. From the standpoint of street safety, they are of course paramount. In his recent proclamation, President Roosevelt said: "Traffic accidents alone caused 34,500 deaths in 1940, and thus far in the present year there has been an increase of 17 per cent in traffic fatalities. By taking a huge toll in life and property, accidents definitely hinder our national defense effort. To insure maximum efficiency we must have maximum safety 24 hours a day—not only at work, but also on the highway, at home, everywhere."

To maintain even the present degree of safety on the city streets, where the crowds are, requires the ready availability of traffic-safety devices.

This SEA-GOING SEWER HAD TO BE TOUGH



You won't hear an SOS from this sea-going outfall sewer. Engineers made sure of low-cost, trouble-free service by using Asbestos-Bonded ARMCO *Pipe.*

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ARMCO Corrugated Pipe brings other desirable advantages. It combines adequate strength with light weight for easy handling and hauling in long lengths. Naturally longer lengths mean fewer joints, lower installation costs. Unskilled men can do the work in any season, using simple tools. Curing is eliminated.

Use Asbestos-Bonded ARMCO Pipe for your next sewer line. You will save money and avoid trouble, especially on the tough jobs. Write for prices and complete information. ARMCO DRAINAGE PRODUCTS ASSOCIATION, 5059 Curtis Street, Middletown, Ohio.

Asbestos-Bonded ARMCO SEWER PIPE

Why not remember to mention THE AMERICAN CITY?

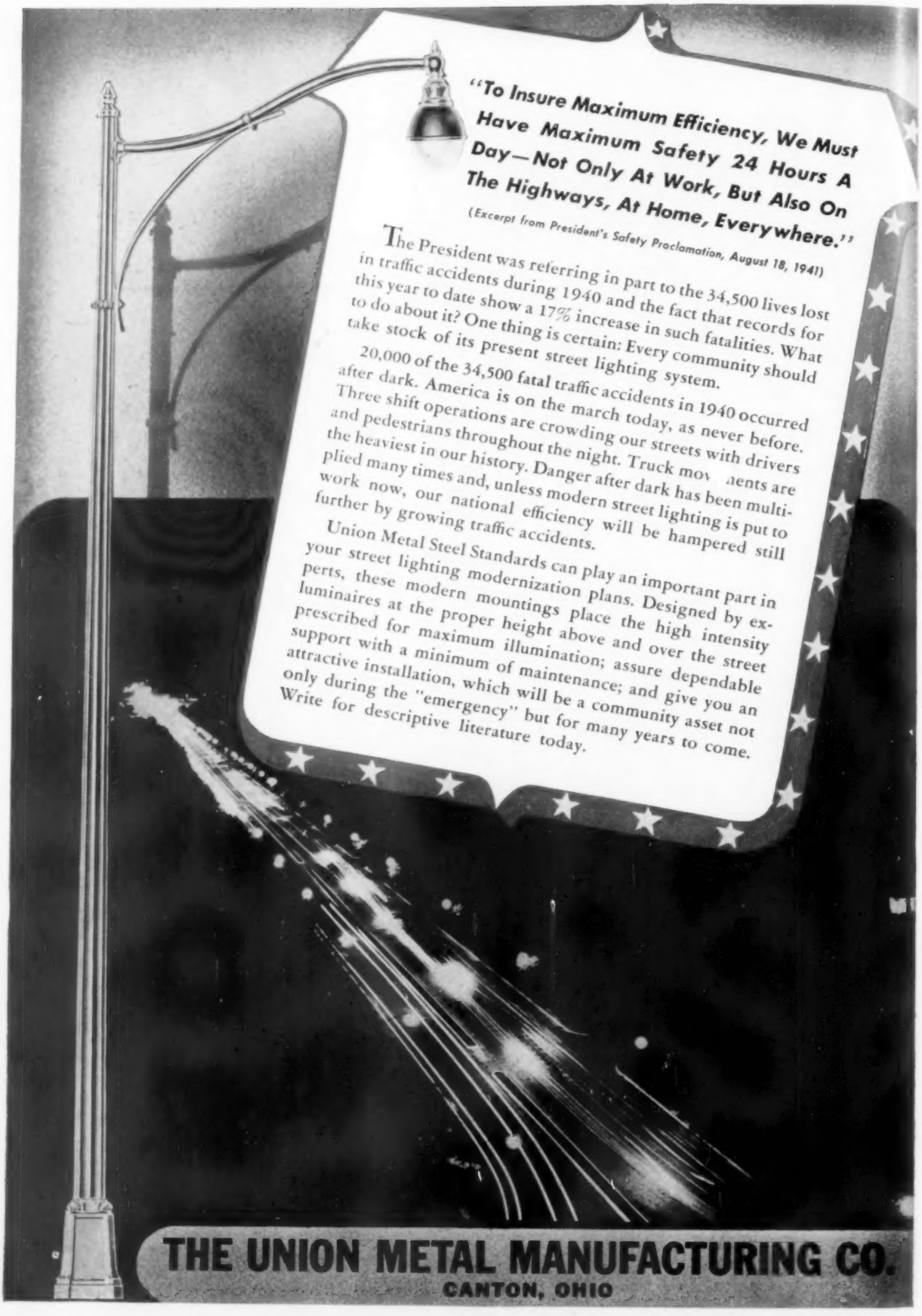
San Francisco Is Successfully Using Two-Way Radio on Police Motorcycles

SPEAKING of two-way short-wave police radio and the speedy maneuverable motorcycle (and the two combined), Police Chief Charles W. Dullea of San Francisco says: "The unceasing need to keep astride or ahead of the criminal prompts the police department to adopt any new device making that possible."

The San Francisco Police Department owns 42 solo motorcycles and 50 three-wheel motorcycles of Harley-Davidson manufacture, nearly all equipped with radio transmitters as well as RCA receiving sets. The transmitters are a recent addition. Says Captain Albert H. Munn (in 2d and 3d photographs), in charge of the Motorcycle and Traffic Division: "The speed and ease with which motorcycles can move into position enable the Department to block off all arteries leading out of the city."

DRAMATIS PERSONAE

1. *Chief Charles W. Dullea.*
2. *Captain Albert E. Munn, Chief of Traffic Division, detailing to posts, Officers Wright, Druhan, and Atkinson. The radio is the numbered box on the rear wheel.*
3. *Captain Munn examines a report.*
4. *Officer Frank Matzsich is broadcasting to Officer Louis Druhan at right (5), who at bottom (6) is acknowledging receipt of the call.*


"To Insure Maximum Efficiency, We Must Have Maximum Safety 24 Hours A Day—Not Only At Work, But Also On The Highways, At Home, Everywhere."
(Excerpt from President's Safety Proclamation, August 18, 1941)
The President was referring in part to the 34,500 lives lost in traffic accidents during 1940 and the fact that records for this year to date show a 17% increase in such fatalities. What to do about it? One thing is certain: Every community should take stock of its present street lighting system.
20,000 of the 34,500 fatal traffic accidents in 1940 occurred after dark. America is on the march today, as never before. Three shift operations are crowding our streets with drivers and pedestrians throughout the night. Truck mov aents are the heaviest in our history. Danger after dark has been multiplied many times and, unless modern street lighting is put to work now, our national efficiency will be hampered still further by growing traffic accidents.
Union Metal Steel Standards can play an important part in your street lighting modernization plans. Designed by experts, these modern mountings place the high intensity luminaires at the proper height above and over the street prescribed for maximum illumination; assure dependable support with a minimum of maintenance; and give you an attractive installation, which will be a community asset not only during the "emergency" but for many years to come. Write for descriptive literature today.
THE UNION METAL MANUFACTURING CO.
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Outdoor Lighting

Streets—Highways—Floodlighting

Detroit Relights for Safety at 40 Cents More Per Capita

By L. J. SCHRENK
General Superintendent,
Public Lighting Commission,
Detroit, Michigan

To light the way of thousands of defense workers traveling through Detroit's residential areas, this new 2-way General Electric luminaire comprising a specular reflector closed at the bottom by a Holophane one-piece refractor, permits 300-foot spacings with clear silhouette vision

CONTRARY to the general belief, many antiquated street-lighting systems throughout the country can be rebuilt into a system of traffic-safety lighting without materially increasing the annual expenditures for street lighting. Detroit in 1930, with a census population of 1,568,662, spent $1,430,561 for street lighting, or 91 cents per capita, including operation, maintenance, depreciation and interest. The system at that time operated 28,000 street lamps with an average light output of 4,300 lumens per lamp.

Ten years later, or the end of 1940, found Detroit with its street lighting on the major portion of its heavy traffic thoroughfares rehabilitated into a traffic-safety lighting system, with many additional lamps installed on lesser thoroughfares and residential streets. The lighting system in 1940 operated a total of 40,121 street lamps with an average light output of 6,983 lumens per lamp. In the fiscal year ending in 1940, Detroit, now with a population of 1,618,549, spent $1,640,341 for street lighting, or $1.02 per capita, as compared with the 91 cents in 1930.

Detroit's street-lighting modernization program for its primary and secondary thoroughfares is 55 per cent completed; however, the program for rehabilitating and modernizing the street lighting in most of its residential sections and local areas is only begun. When these programs are completed, it is estimated the cost per capita will not exceed $1.35, or 44 cents more than with the old inadequate and unsafe street lighting.

A recent study made by Otto P. Ortlieb, Engineer of Street Lighting, city of Trenton, N. J., gives the average cost per capita as 98 cents for street-lighting expenditures in the year 1940 for 183 cities in the United States.

What can be expected in accident reduction when a new street-lighting installation has been put into operation? How much light is necessary for the motorist to have adequate visibility on a traffic thoroughfare? What is the most economical amount of illumination to be used to obtain the greatest reduction in night fatalities? Is the "Recommended Practice of Street Lighting" an accurate criterion to be used? These are among the many questions that confront the street-lighting engineer or specialist every time a proposed new street-lighting job is presented to him.

Detroit has had the good fortune to be one of the first cities to install improved safety lighting on a large scale. The conclusion of 1940 found this city with over 300 miles of traffic streets illuminated with improved safety lighting. The predominant type of pavement used in these studies is of a dark gray asphalt. These streets vary from 30 to 90 feet in width and handle medium to extra-heavy traffic.

The night fatality curves all appear to have the same general shape and characteristics. As lighting is increased, this trend of night fatality is downward to a point where the day and night fatality rate follows a parallel course. An increase in lighting beyond this point does not have a proportioned effect on accident reduction. The exception to this is on the 30 to 40-foot streets, the last to be relighted.

The 60 to 90-foot streets were among the first to be relighted under the safety-lighting program. A rise in both night and day fatalities in the highest illumination group may be due to the fact that during the last two years traffic has increased 20 to 25 per cent.

The amount of illumination that seems to provide adequate visibility and to have maximum benefit for the amount of light installed appears to be approximately 0.8 effective lumen per square foot, provided the light is distributed in such a manner on the street surface as to give the motorist a pavement which appears to be of a nearly uniform brightness. The safety lighting installed in Detroit consists of light-controlled units throughout all traffic streets, to give as nearly a uniform brightness as possible. The general summary curve indicates that for any given street-lighting installation, the fatality rate can be reasonably predicted over a period of years. This curve shows a decrease of 54.6 per cent in night fatalities after adequate illumination was installed.

Instead of trying to make the lighting of traffic streets a complicated problem with different standards for every size and description of street, it appears from this study that any street in Detroit classed as a traffic thoroughfare should have at least 0.8 effective lumen per square foot of illumination. The safety of a street at night depends primarily upon the motorist's ability to see. If the improved safety lighting is not adequate to produce this visibility it has failed to provide the motorist and pedestrian the protection and safety which they have a right to believe exist on their traffic streets.

Undoubtedly, higher intensities of street lighting add to the ease and comfort of night driving. They provide a factor of safety over what appears to be the most economical value of illumination.

This spectacle of New York's famous Central Park on a wintry night displays a fairyland of lights from innumerable SLATER LAMPS. Not only do SLATER LAMPS light the way to greater safety on New York City's streets and in its great parks, but, owing to their sturdiness and durability, they *light the way to greater savings*, as well.

A post-card request will bring you further information.
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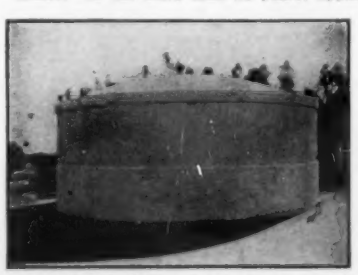

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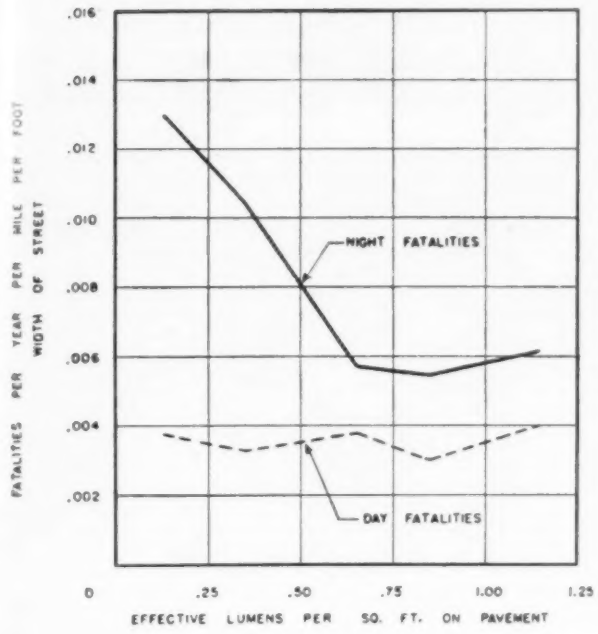

Summary curves of night and day fatalities on 101 miles of safety-lighted streets in Detroit. Note how the two curves now run parallel

New Resident Street Luminaire

During the last few years, night-traffic accidents have increased materially in Detroit's outlying areas. These residential sections have been growing rapidly due to an astonishing increase in building activities and a great shifting of population. Street lighting could not keep pace with this rapid growth due to the lack of available funds. Regardless of this fact, there was a constant demand and need for better lighting.

It was decided that the solution to this problem involved the design of a luminaire radically different in light distribution. The major requirement was wider spacings. An enlarged light-giving area was desirable to reduce excessive glare. Other considerations were that the luminaire must adequately shield the house fronts and porches, at the same time illuminate the sidewalks, and, finally, do an effective job of street lighting. The new light distribution must produce good pavement brightness without discomforting glare, and result in an excellent general lighting effect throughout the entire length of the street. A mounting height of 25 feet, and 300-foot spacing, was finally decided upon.

In studying transverse locations for roadways 30 feet in width or less, it was found that the most effective location was over the center of the street. This location at the intersection and between intersections is most favorable for the proper delivery of the light flux to the street surfaces. Center mounting also most readily permits adequate shielding of houses and allows the greatest mounting height without tree interference.

An entirely new design of luminaire was developed to meet the varied requirements of this street-lighting distribution, with its special shape of vertical photometric curve along the street and the high degree of shielding required toward the residences. This luminaire comprises a specular reflector of the shielding type, closed at the bottom by a prismatic one-piece refractor.

One of the most satisfactory features of the luminaire is its lighted appearance to motorists traveling along the street. The candlepower, at high angles, comes from substantially all parts of the refractor. Therefore, the refractor appears evenly lighted and luminous over its entire surface. The luminous area that the motorist sees is purposely made as large as economically feasible so that brightness may be held at a minimum. This fact and the fact that the pavement brightness is comparatively high throughout the entire distance between lighting units, permit the use of greater intensities of light at the high angles without discomforting glare. The street-surface brightness obtained by specular reflection from the street tends to be wide and well-spread across the street, since the wide part of the reflector is designed to be placed in a horizontal position.

The luminaires installed with 6,000-lumen lamps, at a spacing of 300 feet, or 18 to 20 units per mile, and a mounting height of 25 feet, on residential streets not exceeding 30-foot width from curb to curb, will give an average of 0.20 lumen per square foot between curbs, well distributed, resulting in maximum contrast between pavement brightness and dark surroundings. The cost of installation and operation of such a system producing twice the effective lumens per square foot as recommended in the "Recommended Practice" for very light traffic is less than a lighting system using conventional luminaires with smaller lamps installed at closer spacings to give 0.1 effective lumen per square foot average.

The modernization program has met with public approval and newspaper endorsement. It was gratifying to note that the *Detroit Free Press* Forum Poll, by J. R. Humphreys, published December 1, 1940, showed that "60.5 per cent in Detroit vote satisfaction with lighting of city's thoroughfares." The article further states: "Although everyone grants there are some streets in the city which should be better lighted, the majority of the people in Detroit feel that, by and large, the motor metropolis is blessed with good street lighting."

—From paper presented before the Thirty-fifth annual convention of the Illuminating Engineering Society, Atlanta, Ga., September 22-25, 1941.

Better Visibility and Safer Night Transportation

When We Speak of Roads for Defense it is natural for the layman to think of highways which will allow the quick transportation of the heavy mechanisms of war, as well as the swift transport of the armed forces of the nation. But roads for defense mean much more. They mean highways capable of swift transport of innumerable raw materials to, and finished products from, Uncle Sam's huge manufacturing plants.

The demand is for speed, speed, and more speed, not only in production but also in transportation. The need for more night as well as day transportation over our highways becomes apparent. Main streets and rural trunk highways will be put to work at night to relieve daylight congestion as well as to keep them on a 24-hour work-day.

If the traffic accident and fatality experience of the last decade is any criterion, this increase in night traffic

A-W "55" MOTOR GRADER

ALWAYS EASY ON THE BUDGET ALL WAYS

● For an inexpensive solution to your maintenance and light construction problems, invest in a THRIFTY "55". It's a rugged outfit with a fine dependable motor; it has a 15-foot wheel base for smooth blading and is equipped with fast accurate A-W hydraulic controls for easy operation of blade and scarifier.

The A-W "55" trims banks, cleans ditches, scarifies rutted pavements, reshapes dirt and gravel roads, builds new ones from bank to bank and plows snow . . . all at worthwhile savings in first cost, upkeep and fuel. Ask for a demonstration. THE AUSTIN-WESTERN ROAD MACHINERY CO., Aurora, Illinois.

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Austin-Western

During December we hope you will remember to mention THE AMERICAN CITY.

without the provision of proper safeguards (including adequate highway lighting where needed) will send the night death and accident rates soaring. National Safety Council statistics show that fatal night accidents increased 15 per cent from 1930 through 1939, while fatal day accidents actually decreased 18 per cent.

Operators of motor vehicles in 1940 used 40 per cent more gasoline in their travels than the automobile drivers of 1930—a big increase in traffic flow. Yet despite more traffic, street-lighting protection for the country as a whole has decreased, with expenditures in 1940 about 17 per cent less than they were in 1930. It becomes apparent that the majority of cities have not improved their lighting systems to offset increased hazard exposure. Street-lighting equipments in most cities indicate they were installed in, and therefore designed for, a slower-speed era.

Outside city limits, night accidents increased 32 per cent from 1930 through 1939, while day accidents on these same highways increased only 2 per cent.

If less visibility after dark is the principal reason for excessive night accidents and deaths, fixed lighting designed to meet the requirements of night drivers will have a favorable effect in reducing these accidents.

—From Report of Committee on Highway Illumination, American Road Builders' Association, 1941.

Stadium Lighting for All the People

By JAMES G. NORTON
City Engineer, Kingston, N. Y.

THE new floodlighting system installed at Municipal Stadium in Kingston, N. Y., was dedicated recently by Mayor Conrad J. Heiselman, not only for night sports such as baseball and football, but for concerts, pageants, religious services, rallies, and community choruses as well. Many citizens prefer a good band concert, chorus, or night pageant. This thought may aid other municipal officials who are undecided as to the justification of night lighting for sports only.

At the dedication ceremonies, 2,182 fans paid admission and saw their first night game under the new lighting system designed by Robert J. Swackhamer, General Electric's sports lighting engineer, who stated that Kingston now owns the best sports-lighting facilities of any municipality in the United States, excepting only the largest cities.

The intensity of light on the field is *1,600 times full moonlight*. Actual light measurements taken in the infield after completion of the installation ran as high as 38 foot-candles or about 21½ itmes ordinary office lighting.

Each 1,500-watt lamp operates at 10 per cent over the rated voltage, which makes a total of 209,000 watts for the 120 lights, equivalent to approximately 2,000 100-watt bulbs. Each lamp furnishes 150,000 beam candles; all the lights furnish 500,000 candlepower. The life of the bulbs burning under the over-voltage is estimated at 300 hours.

It was deemed advisable for safety purposes, as well as for appearance, to keep transformers and other equipment except lights free of the poles. The transformers were set on concrete platforms in welded steel houses placed behind poles and painted green for inconspicuousness.

The crossarms, safety platforms, multibreakers and lamps were all placed on the poles before erection, with the secondary cables inside the pole attached to a copper messenger cable which was connected to a bolt and ring in the top of the pole and to a rod with ring buried in the concrete foundation. A small turnbuckle with hook-and-eye ends attached to rod and cable was used to tighten the messenger cable. This messenger cable serves as a ground and lightning arrester. The entire system is grounded to water lines in the stadium field.

The actual time of erecting the eight poles was four hours, and the equipments used were a Lorain shovel with 40-foot boom and one flat truck with a load of blocks upon which the pole rested until time for raising it. Each pole is bolted to four bolts embedded 5 feet in a foundation, consisting of 9 tons of concrete.

There are three circuits and three oil switches controlling three groups of poles. Two of the circuits supply two poles each, and the third takes care of the four lights in the outfield.

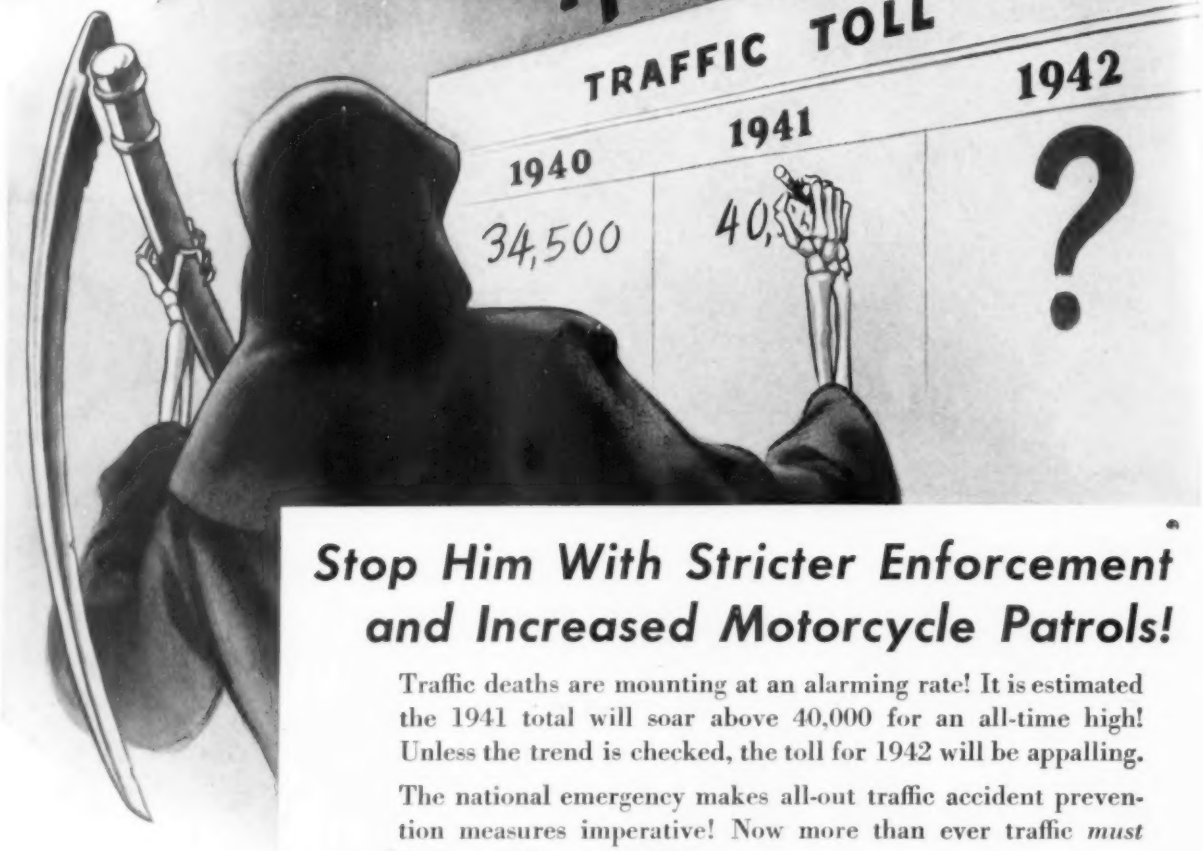
Energy for the new lighting system is supplied by the Central Hudson Gas & Electric Corporation. The labor was furnished by the city and the WPA.

The cost of this system, exclusive of WPA, is as follows:

GENERAL ELECTRIC CONTRACT	$8,667
120 aluminum floodlights with covers	
132 bulbs	
8 80-foot Union Metal steel poles with crossarms and safety platforms	
2 50-kva transformers	
2 75-kva transformers	
3 2-pole, 200-ampere, 5,000-volt oil circuit breakers	
1 3-pole, 200-ampere, 7,500-volt disconnect switch	
18 multibreakers with rain-tight enclosures	
31 fuses and cutouts	
OTHER ITEMS	
Cable, 7,200 feet	$1,784
Other electrical equipment and supplies	248
Wire, 6,300 feet	471
Materials and hardware for switch building and foundations	576
Conduit	375
Transformer houses (steel)	240
Loudspeaker	254
Consumable supplies	18
Labor	500
Engineering and supervision	730
Erection and equipment expense	400
Grand Total	$14,267

View of Kingston Athletic Field

DON'T LET DEATH *Raise Its Quota*



Stop Him With Stricter Enforcement and Increased Motorcycle Patrols!

Traffic deaths are mounting at an alarming rate! It is estimated the 1941 total will soar above 40,000 for an all-time high! Unless the trend is checked, the toll for 1942 will be appalling.

The national emergency makes all-out traffic accident prevention measures imperative! Now more than ever traffic *must* flow smoothly and *safely*.

Multiply your man-power — increase the range and efficiency of your traffic control and enforcement departments with powerful, flexible, dependable Harley-Davidson Motorcycles and Servi-Cars — the most ideal vehicles for police work. Phone your Harley-Davidson Dealer — learn why Harley-Davidsons are first choice of more than 3500 American cities.

HARLEY-DAVIDSON MOTOR CO., *Milwaukee, Wis.*

THE POLICE ★ MOTORCYCLE

HARLEY-DAVIDSON

When you write for that catalog, kindly mention THE AMERICAN CITY.

Forward Steps

Reported by Municipal Officials, Chamber of Commerce Executives, and Others

Many-Use Civic Building Has Fluorescent Lighting and Sound Amplifier

ST. CHARLES, ILL.—Recently donated to this city was an unusual civic building located on the Fox River, housing the city administrative offices and council chambers, a municipal museum, civic work rooms, transportation ticket office, waiting rooms, and an elaborate sound-reproducing system. Besides the building and equipment, the gift includes the river-front site, a shore house, and other waterfront improvements.

The donors were Col. E. J. Baker, his niece Dellora Norris (Delnor) and her husband, Lester J. Norris, who, with the late Mrs. Baker, have also given to the city the Delnor Hospital, the Baker community center, and along with construction funds the site of the municipal golf course and public park recreational center located in the Delnor area by the river.

The marble and granite modern structure, with its deeply recessed windows, is monumental in character. In the tower, above the long abstract-designed, colored-glass windows, is a section of marble-pierced grill work with clocks on four sides of its octagonal form. The tower is capped with diamond-shaped translucent structural glass. Fluorescent-tube lighting is used throughout the building—for the interior, for floodlighting the building at night, and for the changing colors of the dome light. Inside, the spacious lobby has decorated walls; the ceiling is of black glass. R. Harold Zook and D. Cooper Taylor were the architects; the St. Charles Technical Laboratories, Inc., installed the lighting.

The principal function of the sound-reproducing equipment, designed and installed by the Operadio Manufacturing Co., is to strike the hours and the Westminster Chimes every quarter-hour. It is installed in two specially constructed rooms: one, completely sound-proofed, contains the chimes and microphone; the other contains the 2,000 pounds of amplifying equipment. Sound emanates from twelve loudspeakers mounted in four groups of three behind the four marble grills of the tower which are not used for clock faces. The amplifiers, synchronized with the master clock, are turned on two minutes before each quarter-hour; at the quarter-hour, an automatic chiming mechanism which determines the notes to be struck is set in motion; at two minutes after the chimes and hours are struck, the amplifiers are turned off. This sequence can be repeated for any predetermined number of hours with any automatic silent period. Besides being used for the chimes, the equipment can also reproduce radio broadcasts, phonograph recordings, and programs originating in and near the building. A separate remote line running under the river can pick up organ music emanating from the Baker Hotel, which is across the river from the new building.

A colored terrazzo promenade has been built along the river, the retaining wall which supports it designed to form an architectural base for the building proper. Fountains and flowerbeds are built along the landscaped wall, and planting areas are placed in the promenade at the street level.

E. A. KEPLAR,
Secretary, St. Charles Charities.

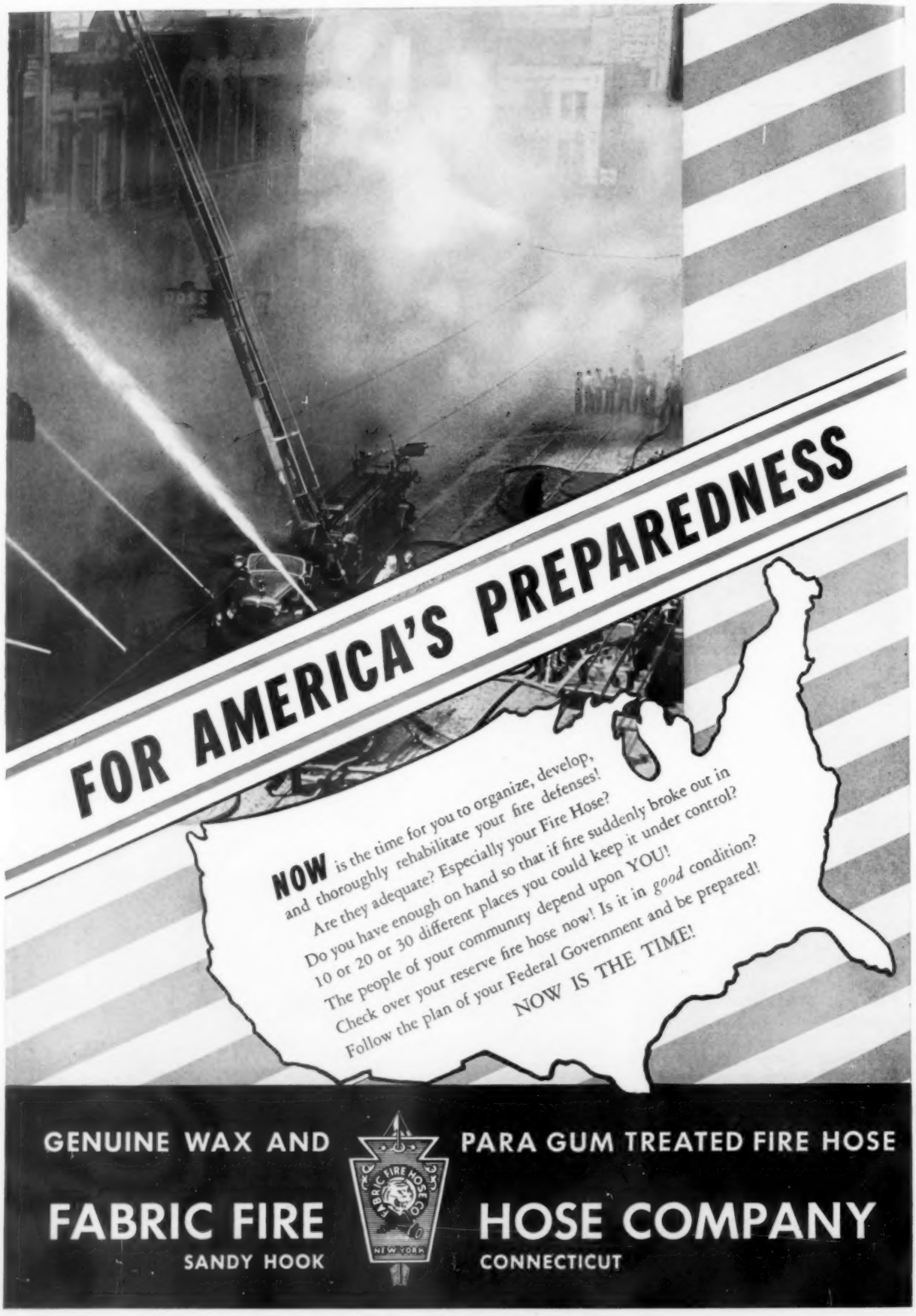
Four Major Projects Getting Under Way in Cleveland

CLEVELAND, OHIO.—Proof that perseverance packs a punch is very much in evidence in Cleveland today as four major projects affecting the city's business and industrial life and the general welfare of the entire community reach the stage of definite action after years of agitation.

For more than a half-century the Cleveland Chamber of Commerce has worked toward straightening the winding Cuyahoga River. Today over 50 per cent of the de-kinking process has been completed at an estimated cost of $6,000,000. In addition, a hearing before U. S. Engineers was held recently for extension of the present head of navigation of the river to provide for expansion of the steel industry to meet defense needs and for future development of the city's heavy

ARCHITECTURAL DESIGN BY R. HAROLD ZOOK AND D. COOPER TAYLOR, ARCHITECTS, CHICAGO

Night view of the Civil Building at St. Charles. For day view, see front cover of this issue


FOR AMERICA'S PREPAREDNESS
NOW is the time for you to organize, develop, and thoroughly rehabilitate your fire defenses!
Are they adequate? Especially your Fire Hose?
Do you have enough on hand so that if fire suddenly broke out in 10 or 20 or 30 different places you could keep it under control?
The people of your community depend upon YOU!
Check over your reserve fire hose now! Is it in good condition?
Follow the plan of your Federal Government and be prepared!
NOW IS THE TIME!
GENUINE WAX AND PARA GUM TREATED FIRE HOSE
FABRIC FIRE HOSE COMPANY
SANDY HOOK CONNECTICUT
FABRIC FIRE HOSE CO.
NEW YORK

industries.

The Chamber also has worked over a period of years to establish a master plan for the growth of Metropolitan Cleveland. Today the Chamber is taking steps to engage the best available city planning engineer as a full-time staff executive to work with the Chamber's Metropolitan Development Committee in carrying out a master plan embracing the coordinated efforts of various planning agencies.

Increased building in Metropolitan Cleveland, reaching a 68 per cent gain for the first 6 months of 1941 over the same period of 1940, plus demands of defense housing, has brought to a head the Chamber's continuing effort for a revision and recodification of Cleveland's building codes. Today the Chamber has made funds available and will employ the best available building code engineer to revise and recode the city's antiquated building requirements and to recommend changes in building codes of suburban communities in Greater Cleveland.

Another continuing effort is nearing its goal—at the request of the Chamber, the Cuyahoga County Commissioners will place before electors in November the election of a Charter Commission to reorganize the county's government administration.

Thus, Cleveland today takes four major steps forward on projects that have been the object of organized effort and perseverance. Long-range planning and constant effort get results.

—Taken from *Headlines from Cleveland*, organ of the Cleveland Chamber of Commerce.

Sioux City's Riverfront Development

SIOUX CITY, IOWA.—After years of study and planning, the project plan below has been worked out. The landscape plan is built about the site of the new Municipal Auditorium, which was started in September. The Missouri River Boulevard will be a parkway for about five miles along the river front. Work on this road has been going on for several months.

The City Park will eventually occupy some thirty acres of land reclaimed from the river by the United States Government work, making the Missouri River a navigable stream.

Important features of the landscape plan are the provisions for heavy traffic along the river road, parking facilities for 2,000 cars, and easy accessibility to the Municipal Auditorium for patrons. The building is within walking distance of the main hotels and the general business area of down town.

The plan, as adopted, has received the combined study and approval of the City Engineer, traffic engineers of the State Highway Commission, of the City Council, the City Docks Commission, the Missouri Waterways Committee, the State National Defense Council, the Real Estate Board, the Chamber of Commerce, the Sioux City Construction League, and other civic organizations.

When completed, it will be the realization of a beautiful city dream from a city dump.

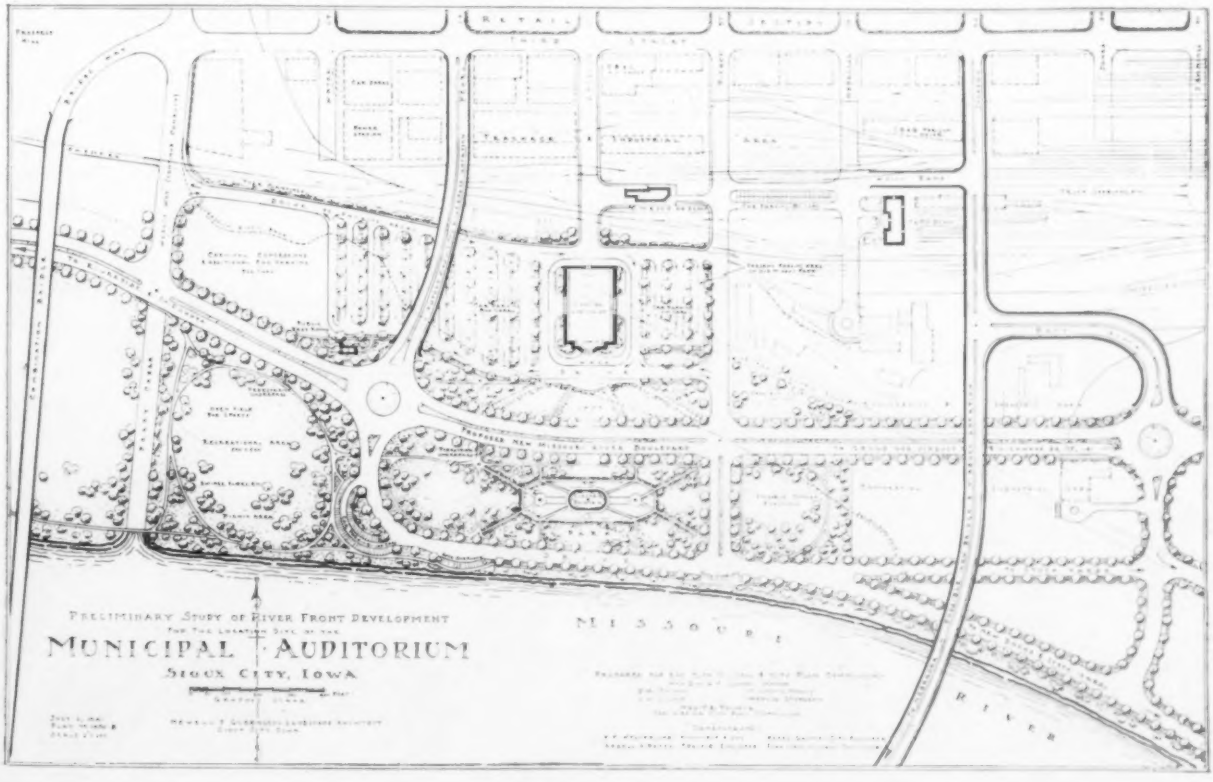
MRS. C. E. PALMER,
Executive Director, City Plan Commission.

New City Department Controls Real Property Sanitation

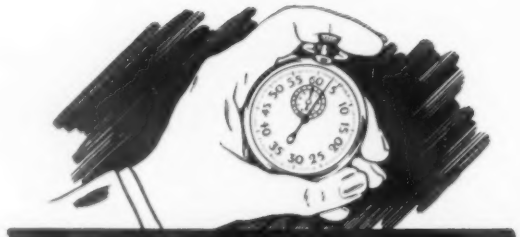
HOUSTON, TEXAS.—This city has created by ordinance a new department of municipal activity that has stepped up corrective measures with reference to insanitation, and at the same time has been the means of promoting civic beautification.

It is called the Real Property Sanitation Control Department, and its office of Chief Inspector supplants a former office called by the prosaic title of Weed Inspector. The new department is a subdivision of the city Health Department.

It is charged with the duty of enforcing all city ordinances regulating sanitary conditions of public and private real estate, with particular reference to weeds, brush, rubbish and all other "objectionable, unsightly or insanitary matter." The ordinance also sets forth that the department must be concerned with holes on property where stagnant water may collect, and



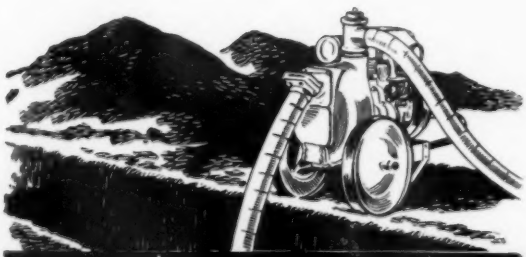
"Century" Asbestos-cement Pipe will help you when your pipe laying is complicated by—



NEED FOR SPEED. . .

UNSKILLED LABOR. . .

DEEP TRENCHES . . .



WET SUBSOIL

Towanda, Ill., recently laid many thousand feet of K&M "Century" Pipe. The trenches were six to eight feet deep, yet in one section five men, a WPA crew, laid 117 feet of 4-inch pipe in twelve minutes, almost ten feet per minute. This included installing and tightening couplings, under the most difficult trench conditions.

Naturally installation time depends on local conditions. But you can count on saving time when laying "Century" Pipe, especially the new 18-foot lengths now available in 6-in. and 8-in., class 150. These 18-foot lengths require 28% fewer joints . . . 113 fewer joints per mile. K&M 13-foot lengths are available for those cases where shorter lengths of pipe are more advantageous.

"Century" Pipe has a lastingly smooth interior that never corrodes or tuberculates. It is easy to handle because of its light weight. And it's easy to make tight flexible joints that allow the pipe to be laid in large radius curves, with angular deviations up to six degrees, without needing bends. Write Dept. 1017 for free booklet, "*Mains without Maintenance.*"

* * *

Nature made asbestos; Keasbey & Mattison Company has made it serve mankind . . . since 1873.

K&M "Century" Pipe is still available. Since we are cooperating fully with the National Defense Program, we cannot tell how much longer this favorable situation will continue.

KEASBEY & MATTISON
COMPANY, AMBLER, PENNSYLVANIA

47 New Ford automobiles bought by the Houston Police Department for patrol duty. (See p. 81 of the Nov., 1941, issue of THE AMERICAN CITY.)

John Deere No. 7 power weed mower used by Real Property Sanitation Control Department

with any other conditions that are "unhealthy, unwholesome and obnoxious."

It is reported that under the operation of this department a new and expanded service is now being performed in the interest of the citizens of Houston. New power and mechanized equipment has been added to the facilities of the department which has made for greater efficiency in the destruction of weeds and has enabled workmen to cover a larger area in a shorter period of time.

During the first two months of the department's operation, weeds were cut from approximately 2,500 vacant lots in widely separated districts of the city. Hundreds of inspections were made and corrective measures taken with reference to insanitary conditions on vacant property.

"We feel that the activities of this department are not only contributing to the public health, but are operating as an effective agent in the promotion of city beautification," Mayor C. A. Pickett said.

BURT RULE,
Statistician, City of Houston.

Celebration on Lake Shore of Former "Dust Bowl"

DALHART, TEXAS.—For six years, Dalhart has entertained the old cowboys of the XIT with a big celebration, now famous throughout the Southwest as the Annual XIT Ranch Reunion. This year the celebration, held August 4 and 5, had a twofold purpose, for all events were held on the shores of a beautiful lake, where just a short time ago only dust and desolation prevailed, in the heart of what was then known as the Dust Bowl.

At the 1941 Reunion a huge crowd, including visitors from five states, honored those pioneers who had worked for the XIT in its heyday, and at the same time rejoiced that the Dust Bowl has definitely been conquered, and that Rita Blanca Lake, a 500-acre body of water, now shimmers in the sun at the foot of the main streets of Dalhart. The lake, formed by a 70-foot dam, built by the government during the drouth years, was filled for the first time by rains of the past spring.

And, for the first time since the inauguration of the annual XIT Reunion, water sports were the highlight of the two-day program, with motorboat and sail-boat races, water-skiing, aquaplaning, and a bathing-beauty revue staged on a platform built over the lake. Rodeos were held in the XIT Stadium on the lake shore, and the program for each morning featured a colorful parade with old-fashioned costumes, recalling the days when the XIT, that fabulous cattle kingdom of half a century ago, was grazing thousands of cattle on three million acres of virgin pasture.

The XIT Ranch has had one of the most romantic histories of the Old West. Texas, some sixty years ago, traded the land lying between the present site of Lubbock, Texas, on the south, and the Oklahoma state line on the north, for the construction of the red granite capitol building at Austin, Texas. The land, then unfenced, untouched by plow, became known as the XIT, meaning "Ten Counties in Texas." The people of Dalhart have weathered the dust storms, rehabilitated their farm lands and, with Government aid, have carried through a program of water conservation.

HAZEL C. UPSHAW,
(Of Amarillo, Texas.)

Model City Charter
1941 Edition
(See pages 105 and 109)

Rita Blance Lake, a man-made body of water in the former Dust Bowl. The parade, which was part of the Annual XIT Ranch Reunion celebration, held on the shores of the new lake

A QUARTER-CENTURY of DEPENDABLE SERVICE

. . . that's Mathieson Chlorine's performance for the City Water Works, Elyria, Ohio!

View of Pump Building, Elyria Water Works

Filtration Building, Elyria Water Works

A. J. Miller, Chief Engineer, Elyria Water Works

A quarter-century of dependable service, and still going strong! In the words of A. J. Miller, Chief Engineer Elyria Water Works... "We have used Mathieson Liquid Chlorine for a quarter-century and can vouch for its absolute purity. Mathieson products are so *uniformly* pure... I can depend on them not to clog delicate valves or machinery." Mathieson Chlorine is used for pre- and post-chlorination of the water supply for Elyria and surrounding territory.

In cities and towns all over the country Mathieson Chlorine is rendering this same dependable service year after year. Ask the city engineer or chemist who uses it . . . and he'll tell you about the *purity* of Mathieson Chlorine... the *trouble-free* valves... the *well-kept* cylinders... all of which are an integral part of Mathieson Chlorine service.

HTH comes in 5-lb. cans with replaceable caps, packed 9 cans to the case; also in 100-lb. drums.

Many water works also keep on hand Mathieson HTH—a free-flowing mobile chlorine carrier containing over 70% available chlorine, for use when water mains break or other emergencies arise. Information on these two Mathieson sanitation products—Chlorine and HTH—is available on request.

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LIQUID CHLORINE... HTH... SODA ASH... CAUSTIC SODA... BLEACHING POWDER... AMMONIA, ANHYDROUS and AQUA... BICARBONATE OF SODA... PH-PLUS (FUSED ALKALI)... DRY ICE... CARBONIC GAS... SYNTHETIC SALT CAKE... SODIUM CHLORITE PRODUCTS

Prepared by
FRANK B. WILLIAMS
Author of "The Law of City Planning and Zoning"

Zoning and Planning Notes

With the cooperation of
EDWARD M. BASSETT
Author of "Zoning" and of "The Master Plan"

Zoning Ordinance—Residence District—Single Lots

CALIFORNIA.—*Spinelli v. County of San Diego*,* Superior Court, January, 1940, not reported.—The property in question was a small lot (.7-acre), lying between a busy state highway, a county highway, active railroad tracks and a high bluff. It had been formerly a part of an 8-acre tract, and in the zoning which was made in connection with the relocation of the state highway which relocation left this 7-acre lot between the state highway and the railroad), the then owner had requested that this small piece of property be left in the same district as the 7.3 acres on the other side of the relocated state highway. The district where the property in question is, as well as adjoining properties along the state highway and the 7.3 acres across the highway, was limited to agricultural and residential purposes and required one acre per residence.

The small piece in question was sold to the plaintiff, Spinelli, who applied for a zoning amendment which would permit him to erect a gasoline station. The application was rejected by the planning commission and the county governing body, and Spinelli filed an action for a declaratory judgment. The court decided against him.

The court stated that the general welfare and protection against spotty business development along the highway is sufficient reason for the zoning even where there is some hardship on an individual property. The ruling is clearly in favor of compact, as distinguished from spotty, business uses along major highways.

EDITOR'S NOTE.—While the creation of a one-lot zone may be reasonable, the courts have in many cases found it to be invalid. See the Pennsylvania case of *Huebner v. Philadelphia Savings Fund Society*, 192 Atl. 139, summarized in our Notes for March, 1938; the New Jersey case of *M. E. Church v. City of Linden*, 173 Atl. 593 given in our Notes for November, 1934; and the New Jersey case of *Guaranty Construction Co. v. Town of Bloomfield*, 168, Atl. 34, digested in our Notes for September, 1934.

* From the *News Letter* of the American Society of Planning Officials.

Zoning Ordinance—Criminal Prosecution—Injunction

GEORGIA.—*City of Atlanta v. Miller*, Supreme Court, March 19, 1941, reported in 13 S. E. 2d, 814.—Miller is the lessee of property which he is using for the storage of lumber. The city claims that this use, on part of this property, is contrary to the zoning ordinance and threatens to bring criminal action against Miller on that account. Miller and the owner of the property therefore ask for an injunction against the city to prevent it from interfering with this use, or bringing criminal proceedings for violation of the ordinance.

The court holds, however, that an equity court has no jurisdiction to enjoin the institution of prosecution for criminal offenses, and that this rule is applicable to prosecution for violations of municipal ordinances which are quasi-criminal proceedings.

Nor will the court, in such case inquire into the validity or reasonableness of the ordinance.

Zoning Two Sides of a Street for Different Uses

MICHIGAN.—*Moreland v. Armstrong*, Supreme Court, March 11, 1941, reported in 297 N. W. 61.—This is an action by property owners in the city of Adrian to restrain the city from issuing any permit for a business structure on a lot at the corner of Toledo and Broad Streets, now zoned for business. On the lot is a building, which, it is testified, is unsuited for use for residential purposes, and cannot be profitably remodeled for such use. At this point the street is zoned on one side for business and on the other for residential use. The city recognized that there were difficulties in zoning this area, located within a block or two of the business center of the city, on account of the gradual change in use of property here from residence to business.

There was considerable testimony with regard to the development in this neighborhood, and the court decided that under all the circumstances, the zoning was reasonable.

Residential Zoning District—Accessory Uses—Artist

NEW YORK.—*People v. Daly*, Court of Special Sessions of New Castle, Westchester County, June 30, 1941.—A neon sign maker who colored ready-made signs at his residence, which was in a residential district, and who maintained trucks on the premises, and advertised his business by a sign on his lawn, is not an artist within the meaning of a zoning ordinance allowing artists to maintain offices in their dwellings, especially where he had filed a certificate to do business under a company name and displayed the name and telephone number on trucks.

The esthetic quality of the product is not material. The profession of art may be practiced at home. This does not mean that a commercial artist may not under the ordinance paint at home; but when he forsakes professional standards for commercial practices, he must operate in a business district.

Zoning Ordinance—Use Within Given Distance of Another Use—Garage—School

NEW YORK.—*Matter of Maclay v. Murdock, Supreme Court, New York County*, reported in *New York Law Journal*, July 22, 1941, p. 169.—This is an application for a permit for a gasoline service station, repair shop, and office. The Zoning Resolution of the City of New York prohibits the location of a gasoline service station within a certain radius of a school maintained by an established religious group. The school in question was maintained by a group of private people and was supported by charity. It was devoted to the religious and secular instruction of Chinese children, the principles of Confucius, Chinese grammar, history and geography.

The Court holds that the school is maintained by an established religious group; and that, the proposed location of the garage being within the distance from the school in which the location of a garage is forbidden, the permit must be refused.

Commercial District—Ice and Ice Cream Manufacturing—Estoppel—Non-Conforming Uses

TEXAS.—*City of Corpus Christi v. Jones*, Court of Civil Appeals, October 2, 1940, reported in 144 S. W. 2d, 388.—Jones is the owner of a tract of land located in a commercial district, under the zoning ordinance of the city of Corpus Christi. Upon it he has erected a building in which he wishes to manufacture ice. Such manufacture is forbidden in this district by the zoning ordinance.

Jones contends that the city is estopped to enforce the ordinance because the city engineer issued a permit for the plant, and no city official informed him that its use for manufacturing ice would be contrary to the ordinance. This claim the court overrules, saying:

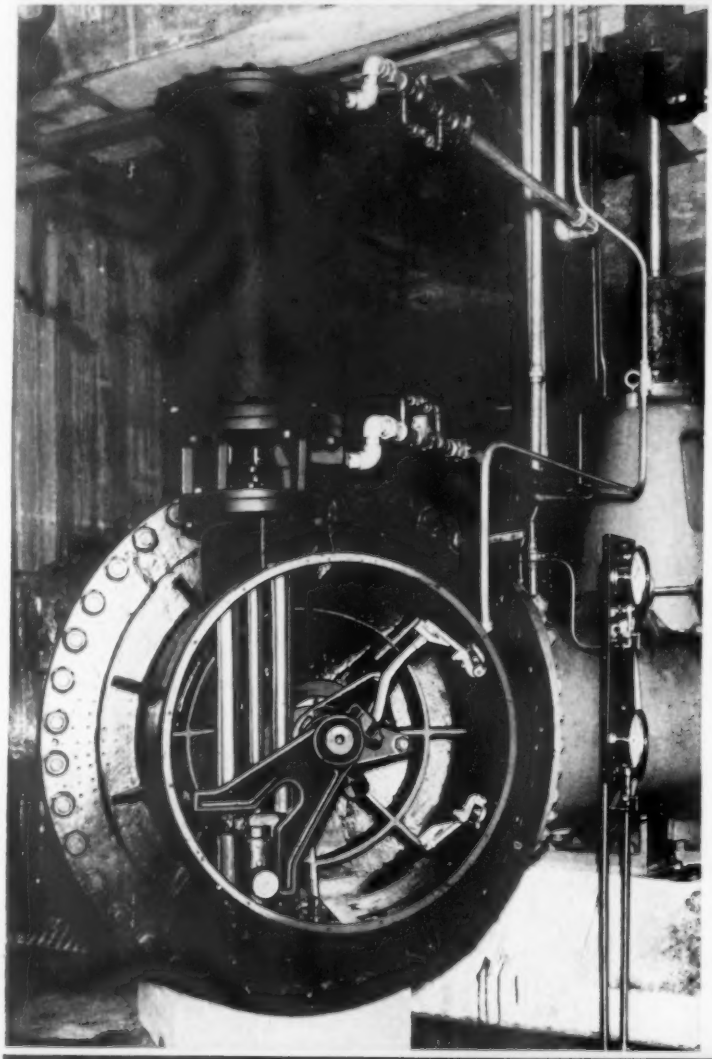
"The fact that a city official or employee fails in certain particulars to enforce the regulation cannot render it invalid, nor estop the city from asserting its validity. . . . We are not here concerned with a situation where a long-continued failure to enforce a zoning ordinance has resulted in the development of a de facto industrial district in a residential area,

Efficient, Economical, Automatic!

OPEN SHUT

CHAPMAN

Unwedge — Rotate — Rewedge



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For many important applications in water supply and sewage disposal service, the Chapman Automatic Cone Valve is the most efficient and economical valve we know of. This plug-type valve, with its pipe-line waterway, self cleaning seats, and unique operating mechanism, is equally efficient for air, water, gas or sewage. It is built in sizes from 6″ to 48″ for manual, hydraulic or electric operation, with various types of automatic control. For such uses as stop-check, altitude and liquid level control, pressure regulating, etc., the Chapman Automatic Cone is the outstanding valve in this field.

At left:
Chapman Automatic Cone Valve
Sewage Pump Discharge Check
Showing Operating Mechanism

THE CHAPMAN VALVE
MANUFACTURING COMPANY
INDIAN ORCHARD, MASS.

which would render a belated attempt at enforcement ineffective and useless in promoting the public health, safety, morals or general welfare of the community."

The ordinance is not discriminatory and void because it permits ice-cream manufacturing plants in commercial districts and not ice-manufacturing plants. Ice manufacturing tends to develop large plants, and uses heavy machinery, while ice-cream manufacture does not. One therefore may be classified as heavy manufacture and the other as light manufacture.

The provision is also sustained because it constitutes part of a well-considered, carefully prepared and comprehensive plan.

The existence, at the time of the making of the ordinance of a number of nonconforming uses, in the neighborhood of the property in question, does not make the ordinance invalid. The assignment of an area to certain uses is made with a view to the development of that area to be expected and desired, and it is entirely proper thus to look to the future in the making of such regulations.

California Preserves Its Beaches

California, in the last session of its state legislature, has taken steps to preserve its beaches, so essential to the health of its citizens, and the pleasure of its many visitors. Among the measures are appropriations for the benefit of counties which have adopted master plans for beach development; and a declaration of state policy to acquire within ten years, for public parks and recreation, all the available beach land on the California coast.

In this time of emergency the state has also, in the interests of safety as well as economy, prohibited illumination of outdoor advertising of such brilliance as to blind or dazzle vision.

Variances for Hardship

The latest report of the *National Institute of Municipal Law Officers* (No. 79, of November, 1941) contains an excellent analysis of the law with relation to the power of Boards of Appeal to vary zoning ordinances for unnecessary hardship. There are also articles on the regulation of taxicabs, the liability of municipalities for falling limbs of trees, and the transportation of inflammable liquids.

City Manager Appointments

H. M. Horton is Acting Manager of Fort Pierce, Fla., while William T. McIlwain, Jr., is on leave for military service.

A. D. F. Bloodworth has succeeded L. L. Lee as City Manager of Miami, Fla.

A. J. Merrill has succeeded J. H. Philpott as Manager of Fort Lauderdale, Fla.

CLARENCE E. RIDLEY,
Executive Director, International City Managers' Association.

Model City Charter Provisions for Planning and Housing

A complete revision of its Model City Charter has just been issued by the National Municipal League.* As stated in the Introduction, this Charter "has increasingly become, in its successive editions since 1900, both the working tool of legislative draftsmen and a text-book on municipal administration for students of the subject within or without our schools and universities."

To meet the increasing public concern with planning and housing problems, 28 sections are devoted to these subjects. In brief outline:

The Charter provides that all matters pertaining to planning, zoning, housing, slum clearance, and the like shall be under the jurisdiction of a five-member planning commission. There shall also be a planning director, who works under the direction of the commission. In addition to these officers, provision is made for a zoning board of appeals of three members.

The planning commission is required to draft and adopt a master plan for the city which represents a long-range program for the city's present needs and future growth and development. Any construction or other changes in the city not in accordance with the master plan must be submitted to the planning commission. If the commission fails to approve any such measure, it shall communicate its reasons to the council, which has power to overrule the disapproval. The planning commission is the platting commission of the city and therefore has similar control over the subdivision of land within the municipality.

The power to establish and modify the official map of the city is vested in the council.

Provision is made for the regulation of the location and size of buildings, the use of open spaces, and the use of buildings, by a zoning ordinance passed by the council. Special exceptions to this ordinance may be allowed by the zoning board of appeals.

The Charter also provides for plans for slum clearance, rehabilitation of blighted areas, housing, and the replanning and redevelopment of neighborhoods and disaster areas. These plans are prepared by the planning commission and are adopted by the council in the same manner as other city ordinances. Mention is made of a separate housing authority, but this is recommended only in states where such an agency is necessary to take advantage of state subsidies under general law; elsewhere the Committee believes that low-cost housing should be handled as a departmental matter under the city manager.

* See page 109 of this issue of THE AMERICAN CITY.

Precedents for Planners

Readers who were interested in the brief descriptions which THE AMERICAN CITY has published* of the plans for the rebuilding of Hill, N. H., will find a stimulating story of the actual achievements of that New England village in the November 1941 issue of *The Architectural Record*. This profusely illustrated 12-page article by Anatole Solow is aptly entitled "Hill, N. H., Recreated—A Precedent for Planners." Its subheads are (1) The Beginners; (2) How the Community Proceeded; (3) From Haphazard to Conscious Planning; (4) Development of the Site Plan; (5) Community Buildings; and (6) Houses. Through the courtesy of the publishers, reprints are obtainable (free for single copies) from THE AMERICAN CITY.

Among other important articles in the same issue of *The Architectural Record* is a challenging discussion of "Defense Housing: Are We Building Future Slums or Planned Communities?" presented by Mrs. Samuel I. Rosenman, Chairman, National Committee on the Housing Emergency.

* Issues of May, 1940, page 75, and July, 1941, page 89.

The Municipal Bond Market

Recent sales of new issues from the November numbers of *The Bond Buyer*:

Amount	Borrower and Purpose	Rate (%)	Term (Years)	Basis (%)
$ 161,500	Auburn, N. Y., Funding	.80	4.66 Avg.	.79
1,500,000	Massachusetts, Boston Airport	.75	3.83 Avg.	.66
200,000	New Rochelle, N. Y., Home Relief and/or Veterans Relief	1.20	5.25 Avg.	1.17
1,250,000	Stamford, Conn., Outfall Sewers, Sewage Treatment Plant and Garbage Incinerator	1.25	10.33 Avg.	1.22
135,000	Fifth La. Levee Dist., La., Refunding	1.5	5.16 Avg.	1.455
100,000	Mason City, Ia., School, Refunding	1.5	4-15 Ser.	1.5
150,000	Berea, Ohio, Electric Light and Power Plant and System Ext. First Mtge. Rev.	1.75	2.9 O.-A.	1.60
108,000	La Junta, Colo., Municipal Power Plant	2.25	9.56 Avg.	2.248
2,100,000	Natchez, Miss., Bridge Revenue Refunding	3	7-20.33 A.-A. Prem.	2.98
464,000	Citrus Co., Fla., Road and Bridge Refunding	4	9.16 Avg.	3.06

The Ladies and Gentlemen of the International City Managers' Association at Hollywood, Fla.

Thoughts Stirred by the Florida Convention of City Managers

By Alden W. Welch

PROBLEMS of national defense and of post-war redevelopment vied for consideration by the record-breaking attendance at the 28th Annual Conference of the International City Managers' Association, at the Hollywood Beach Hotel, Florida, November 23-27, 1941.

In his presidential address, Roy S. Braden of Greenbelt, Md., foreseeing a post-war reckoning, pointed out that there is now no normalcy to return to, but that the price may be depression, unemployment, and a heavy tax burden. The shift, he said, should be from material values to social values; and the municipal services most likely to be expanded are housing, health, and recreation. These services are indeed paramount where a home is a place from which a man goes to work and returns from work, where a clinic is a place where a workman and his family may be kept in shape, and where recreation refreshes men for their labors and strengthens the new generation. Employment is the basic social factor, and one reverts to Mr. Courtemanche's terse prescription of "more industries." For where there are thriving industries and busy merchants, there will not only be the money for producing modern social services, but these services will be worth producing as well.

Taxes and Service Charges

"I have been attending these Conferences for eight years," said Marshall Morton, City Manager of Columbus, Ga., "and the principal question has always been: 'How can we get more money for the current expenses of the city government?'" He pointed out several avenues, such as the Columbus street tax of $3 or 3 days' work on the streets, which raised $40,000 in three months; a larger tax on businesses which could not exist without the facilities that make the city a good place to live in; a modern bookkeeping system which keeps close track of income and outgo, and helps collect delinqent taxes and the use of parking meters, which the public approves. He asked for a show of hands on how many cities collect taxes monthly, as public utilities do with success. Few hands rose. He recommended that more thought be given to monthly tax payments.

The use of service charges to supplement tax revenues was one of the major topics. W. Morgan Works of Long View, Texas, population 15,000, stated that his city collects $115,000 in ad valorem taxes and $53,000 in service charges. Services subject to charges include garbage collection, sewer service, parking privileges, carnivals, and circuses. Against these opportunities for special revenue is the city council's tendency to waive charges. Moultrie, Ga., operates an abattoir and raises 500 hogs, the lard furnishing added revenue. Kansas City, Mo., has engaged in hog-raising at the prison farm and netted $6,000 during the year. Lakeland, Fla., said H. P. Ford, netted $7,500 from hogs this year.

In Decatur, Ga., $6 per residence is added to the tax bill in two installments, and is a lien on the property. For a two-family house the charge is $12; for an apartment house, $6 for each apartment. This charge, and the $1 dog tax and $3 street tax, reach the renters. "Suppose the people do not pay," said J. J. Rausch of Rock Hill, S. C., "it is the officials' job to keep the town clean." "Why charge separately for the general service of refuse disposal?" asked A. C. Nichols of Greenwood, S. C. L. J. Houston, Jr., of Fredericksburg, Va., called it a nuisance charge. His city not only furnishes free collection, but for 11 years has provided steam-cleaned cans as well, and the people appreciate it; annual cost, $1.30 per capita. Mr. Houston suggested that the real source of new revenue for a city is a municipal electric plant, the other charges being chicken feed.

Parking Meters Accepted

There appeared to be no controversy among municipal officials over the effectiveness of parking meters. Such controversy as remains is among merchants, who are invariably won over when confronted with the obvious benefits of actual operation. It appeared doubtful whether the decision should be left to merchants, there being sufficient experience available to warrant the city in going ahead and installing meters. E. M. Shafter of Royal Oak, Mich., said that parking meters are the answer to the problem in the small town. They are solving the problem in Sherman, Texas, said Lee H. Powell, where in deference to merchants a meter has been installed in every other stall, and consecutive installation has now been requested. T. E. Thompson of Shawnee, Okla., stated that the farmers wanted parking meters so that shoppers could park at the stores in place of the merchants' clerks. Norman G. Young of Phoenixville, Pa., urged hearty ac-

All Attendance Records Were Broken by 154 City Managers Who Have Served the Cities for 1,174 Years.

ceptance of meters and recognition of parking lots as assessment-district improvements.

Priorities Buying

One of the brightest immediately practical notes was struck by Earl D. Mallery of The American Municipal Association on the subject of priorities buying. It seems that the present cumbersome and almost meaningless system of AA to B8 ratings will go, and certainly that individual attention will be given to the needs of the city governments. For instance, the State and Local Governmental Branch of the Civilian Supply Division of the Office of Production Management, is expected to be an advocate of the cities instead of a baffle. More cooperation in Washington is coming. In the first place, in many instances no priorities orders are necessary, as the equipment is available from regular sources. Mr. Mallery recommended eight measures for obtaining equipment:

1. Check with normal sources of supply, and check these periodically
2. Simplify specifications and curtail expansion
3. Don't overstock
4. Schedule deliveries to needs
5. Use substitutes
6. Keep equipment serviced and maintained, and make normal replacements
7. Designate an official to handle priorities
8. Interchange equipment use with other municipalities

A Voice from London

That municipal services cannot be separated from the federal defense effort is established by London's experience, as told by Rt. Hon. A. Emil Davies, Chairman of the London County Council. Under the gravest conditions, the municipality must maintain its usual services plus many new ones imposed by the Government. The municipality must take immediate action and take the initiative. In London, by caring for thousands of homeless and parentless children, by furnishing hot food, drink, shelter, and music, as well as by restoring water, gas, and electric services, and by promptly repairing the damaged roofs of dwellings, a new relationship has knitted the municipal government and the people. "It is an atmosphere of affection." Only efficiency with understanding can arrive at this. The first step, as James G. Wallace, City Manager of Wilmington, N. C., pointed out, is to strengthen, motorize, and mechanize the departments, and many of these measures would improve the city in peace time.

Post War

Both Louis Brownlow of the Public Administration Clearing House and Luther Gulick of the Institute of Public Administration envisage tremendous activity for years following the close of the war period. The cities of the world should be rebuilt. It is to be hoped that something of this sort may be undertaken and carried through along sound lines. Until recently, buildings have been erected in response to industrial and commercial development and expansion. The greater this private activity, which amounted to 85 per cent of all construction, the larger the total of taxes available for public improvements. The purpose of this system was production. If ways are found to maintain an adequate volume of production which can be paid for, all else is possible. Mr. Brownlow said that the huge debt will be paid by posterity to posterity. Every effort should be made by all officials and executives to make prosperity the objective. City managers have only one job: to run the city; but as this takes money, the matter of prosperity is of specific concern to city managers.

New Officers

The new officers of the International City Managers' Association are Frank L. Cloud of Kingsport, Tenn., president; H. G. Crow, St. Joseph, Mich., 1st Vice-President; Bill N. Taylor, Port Arthur, Texas, 2nd Vice-President; J. B. Mobley, Jr., Gainesville, Fla., 3rd Vice-President. Clarence E. Ridley continues, of course, as Executive Director.

• • • —

Defense Highway Bill Enacted

UNDER the terms of the defense highway bill (S.1840), enacted by Congress last month, provision is made for the correction of critical deficiencies in highways and bridges essential to national defense, and an appropriation of $150,000,000 is authorized for the construction of access roads to military and naval reservations, defense industries, and important sources of raw materials.

The $150,000,000 appropriation need not be matched by the state, and no formula is set up for its distribution except that "due consideration" shall be given to states which have already expended their own funds on access roads.

For Federal construction of flight strips near highways, the bill authorizes expenditures of $10,000,000 unmatched by the states. Another $10,000,000, to be matched equally by the states, may be spent on advance engineering for express-highways and other projects to be undertaken after the war.

The new measure also authorizes expenditure of Federal-aid funds on construction of parking facilities adjacent to the strategic network, provided that the states agree to forbid on-the-road parking in the area served.

NO. 9

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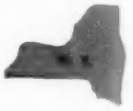
ALCOA ALUMINUM

SIX MORE PLANTS IN FIVE STATES ON THE WAY

DEFENSE PLANT CORPORATION OWNS THEM. We've been designated to build them . . . fast.

Actually, when the names went on the dotted lines of the contract on August 19, we had already placed more than $16,000,000 worth of orders for some of the equipment and materials it takes longest to make and get.

FIVE OF THESE PLANTS will smelt aluminum. Their combined capacity is planned for more than 500,000,000 pounds a year, which is greater than the nation's entire production of aluminum in 1940. Locations: Massena, N. Y., Spokane, Wash., Troutdale, Ore., Los Angeles, and in the State of Arkansas.



The sixth plant will refine alumina from bauxite. Its billion-pounds-a-year capacity adds 58% to the nation's alumina capacity. It will be located at Bauxite, Arkansas.

HOW GOES CONSTRUCTION? At this writing, as fast as title is secured to the sites, contracts are being let for grading and foundations so as to be ready for the structural steel, which is coming as rapidly as it can be gotten.

What is more important, the aluminum plants are scheduled to deliver ingot by the summer of 1942; the refining plant to deliver alumina in early summer, 1942.

WE'VE ASSIGNED a large staff of men full time to headquarters engineering, purchasing, and accounting on this government building job.

We're sending competent and experienced management men out on these jobs as superintendents and other staff executives on construction, and for subsequent operation of such of these plants as we are designated to operate.

EVERY KNOWN IMPROVEMENT in design and construction and equipment is being incorporated in these plants. We intend that every dollar that will be spent shall be the best dollar's worth that experience can build. We do not make one cent of profit from this assigned job of construction.

We think we know how to get the government value-received for its money, because we are completing the expenditure of more than $200,000,000 of our own money in an expansion program which started after the beginning of the present war. Some of this expenditure is in new alumina and aluminum plants which will bring our own Alcoa capacity up to more than 700,000,000 pounds a year. The remainder is in tremendous expansion of facilities for fabricating every form of aluminum.

DEFENSE, GENTLEMEN, is getting its aluminum.

ALUMINUM COMPANY OF AMERICA

Municipal Law Notes and Decisions

Prepared by National Institute of Municipal Law Officers, Washington, D. C.
Charles S. Rhyne, Executive Director, and John A. McIntire, Consultant

Blackouts—Liability of City for Accidents Caused by Such Lighting Restrictions

A pamphlet on "Blackouts" has just been released by the United States Office of Civilian Defense. This pamphlet was prepared by the War Department and gives a comprehensive survey of the planning of a blackout and how to carry it out. On the legal front the "blackout" raises certain questions of municipal liability and requires study of all possibilities by city attorneys.

The Seattle ordinance providing for the pioneer trial blackout in the United States contains the following provision:

> "This ordinance shall constitute an exercise by the City of its governmental functions for the protection of the public peace, health and safety, and neither the City nor any individual responding to the regulations lawfully proclaimed and published by the Mayor, or called upon to assist in enforcing the same, shall be liable in a suit for damages in connection therewith."

The proposed bill (H.R. 4342, 77th Cong. Apr. 14, 1941) to authorize blackouts in the District of Columbia provides:

> "The municipality of the District of Columbia shall not be liable for any damage sustained to person or property during, or as the result of, an authorized blackout."

These statutory provisions raise interesting legal questions as to the effect of a blackout emergency on any legal duty a city may have to light its streets or to maintain its streets in a safe and usable condition. In this connection the recent case of *Lyns* v. *Stepney Borough Council*, 2 K. B. 662 (1940) is interesting. The Court stated the facts as follows:

> "The Plaintiff, Arthur George Lyns, claimed damages from the defendants, the Stepney Borough Council, for personal injuries. On September 15, 1939, when the Lighting (Restrictions) Order, 1939, was in force, the plaintiff was walking shortly after 9 P.M., along Settles Street, in the defendant's borough, when he collided with a sandbin placed there by the defendant council in pursuance of their statutory powers. The night was very dark, and Settles Street, a narrow road with high buildings on each side, was particularly so. The sandbin stood rather further back from the edge of the pavement than a lamp-post would have done, and was three feet ten inches in height. The plaintiff, who suffered injury, alleged that the defendants had been negligent in failing to take any steps, in the absence of lighting, to render the sandbin visible. The defendants denied liability."

The Court held that even though the sandbin was placed in the street by specific legislative authority, the Borough was not relieved of its legal duty to maintain the street in a safe manner by the blackout order and that the Borough was negligent, so it must respond in damages. The Court said the Borough could have smeared some white paint on the sandbin to make it visible.

The Court follows the case of *Morrison* v. *Lord Mayor, etc., Sheffield Corporation*, 2 K. B. 866 (1917) in which the Corporation (city) had under specific legislative authority planted trees in a street and erected guard rails around the trees. These guard rails were dangerous to pedestrians when not lighted and lights were ordinarily maintained. In 1917, during the war, a restriction was placed on lighting and the Plaintiff while crossing the street during the blackout ran into the guard rail and was injured. The Court held that Plaintiff could recover, as the emergency did not extinguish the duty of the Corporation to warn of the danger created by the trees and guard rails. In *Baldock* v. *Westminster City Council*, 88 L. J. 502 (K. B. 1918) the Council was held liable to a taxicab driver when he ran into an unlighted street refuge during a wartime lighting restriction period.

In *Carpenter* v. *Finsbury Borough Council*, 2 K. B. 195 (1920) the Borough was held liable for the death of a van driver who because of wartime lighting restrictions was unable to see an archway over a street which struck his head and killed him. The lighting restrictions were held not to relieve the city of its duty to warn the driver that the "place in question was extremely dangerous."

Decisions of English Courts

In *Greenwood* v. *Central Service Co., Ltd.* (St. Marylebone Borough Council, Third Party), 3 All Eng. L. R. 389 (C. A. 1940) and in *Wodehouse* v. *Levy and Another (St. Marylebone Borough Council, Third Party)*, 4 All Eng. L. R. 14 (C. A. 1940), the plaintiffs while traveling in taxicabs during the hours of blackouts were injured when the taxicabs collided with unilluminated bollards at the end of refuges in the Defendant Borough. They sued the cab drivers and the Borough for damages. The Court held that since the act imposing a duty to light the streets had been temporarily repealed by the Lighting (Restrictions) Order there was no statutory duty on the part of the Borough to light the refuges even though they were obstructions because the obstructions had been placed on the street in pursuance of express statutory authority. The Court also held that since the obstructions were placed in the street pursuant to statutory authority there was no common law duty to light them.

In *Great Central Ry. Co.* v. *Hemlett*, 2 A. C. 511 (1916) a taxicab owner was denied recovery against a railroad when during a wartime blackout he ran into a post erected by the railroad under statutory authority. The Court held the railroad under no duty to warn of the existence of the post since the statute authorizing the erection of the post imposed no such duty.

In *Franklin* v. *Bristol Tramways Co.*, 1 All Eng. L. R. 188 (C. A. 1940), the Plaintiff's decedent was walking along a road wheeling an unlighted bicycle during a wartime blackout when run down and killed by a bus. No recovery was allowed, even though the bus was not properly lighted, as the decedent was contributorily negligent because of his failure to have a red light reflector on the rear of his bicycle.

From the above cases it seems that the English Courts will not hold cities exempt from tort liability for accidents which occur during blackouts on the sole ground of the emergency for some specific statutory provision is required for such exemption. Such exemption, when properly granted by statute, has not been challenged in any of the English blackout cases; but in the United States numerous cases have considered the point. The general rule is laid down in a number of cases that statutes or charter provisions exempting municipalities from liability for torts are within the power of the legislature and are therefore constitutional:

Parsons v. *City of San Francisco*, 23 Cal. 463 (1863);

Mack v. *Charlotte Water Works*, 181 N. C. 383, 107 S. E. 244 (1921);

O'Harra v. *Portland*, 3 Ore. 525 (1869);

Marrell v. *City of Phoenix*, 16 Ariz. 511, 147 P. 732 (1915);

Gray v. *Brooklyn*, 50 Barb (N. Y.) 1868 aff'd 2 Abb. App. Dec. 267 (1868);

Stocker v. *City of Nashville*, 174 Tenn. 485, 126 S. W. (2d) 339, 124 A. L. R. 345 (1939);

Maclam v. *Marquette*, 148 Mich. 480, 111 N. W. 1079 (1907);

Wilmington v. *Ewing*, 2 Penn. (Del) 66, 43 A. 305 (1899);

Hoffman v. *Wilmington*, 4 Boyce (Del.) 486, 90 A. 41 (1914).

Texas and Oregon Cases

In five Texas cases the Courts have held such exemptions invalid as in conflict with the State Constitutional provision that "every person for an injury done him in his lands, goods, person or reputation, shall have remedy by due course of law." *Amarillo* v. *Tutor*, 267 S. W. 697 (1924); *Amarillo* v. *Green*, 267 S. W. 702 (1924); *Hanks* v. *Port Arthur*, 121 Tex. 202, 48 S. W. (2d) 944, 83 A. L. R. 278 (1932); *Terrell* v. *Howard*, 130 Tex. 459, 111 S. W. (2d) 692 (1938); *Christopher* v. *City of El Paso*, 98 S. W. (2d) 394 (1936), while in *Williams* v. *City of Galveston*, 41 Tex. Civ. App. 63, 90 S. W. 505 (1905) and *Reegan* v. *City of Galveston*, 24 S. W. (2d) 61 (Tex. Civ. App. 1929) *contra* decisions were reached.

In Oregon three Supreme Court decisions have held that such statutory exemption is invalid under a State Constitutional provision that "every man shall have remedy by due course of law for injury done him in person, property or reputation." *Mattson* v. *Astoria*, 30 Or. 577, 65 P. 1066 (1901); *Batdorff* v. *Oregon City*, 53 Or. 402, 100 P. 937 (1909); *Colby* v. *City of Portland*, 85 Or. 359, 166 P. 537 (1917), while other Oregon cases held that where a remedy is provided for persons injured by placing the duty to respond in damages for negligence in maintaining streets and sidewalks upon abutting owners or city employees, the Constitutional provision is not violated and the municipal exemption will be sustained. *Humphrey* v. *City of Portland*, 79 Or. 430, 154 P. 897 (1916); *Caviness* v. *Bale*, 86 Or. 554, 169 P. 95 (1917); *Plat* v. *Newberg*, 104 Or. 148, 205 P. 296 (1922); *Nowan* v. *City of Portland*, 88 P. (2d) 808 (Or. 1938).

The cases involving notice of claim statutes amply affirm the general rule that the legislature may entirely exempt municipalities from liability for torts, so that the notice requirements are well within the power of the legislature. See "Tort Notice of Claim Statutes"—National Institute of Municipal Law Officers Report No. 60.

Home Rule—Police, Fire and Health

Upholding the state police pension fund and the state firemen's pension fund systems against attack by the city of Cincinnati, the Court holds that the Ohio constitution provides for local home rule only in matters of purely local concern, and that matters of police, fire and health are of state-wide concern. *Cincinnati* v. *Gamble, State ex rel. Ellis, City Solicitor of Cincinnati* v. *Stewart*, 34 N. E. (2d) 226 (Ohio, 1941).

Housing—Race Discrimination

Selection of tenants for occupancy in Philadelphia Housing Authority public housing projects by choosing between white and colored families in proportion to the respective white and colored population in the neighborhood served by the projects, does not discriminate against the colored population in violation of the Fourteenth Amendment. *Favors* v. *Randall*, U. S. D. C. E. D. Pa., July 9, 1941.

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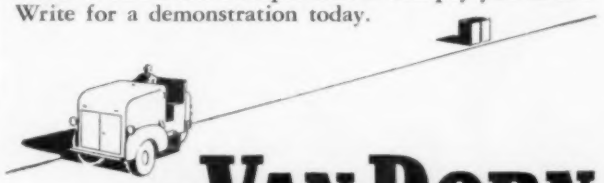

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Refuse Collection

Refuse Collection Practice.—By the Committee on Refuse Collection and Disposal, American Public Works Association, 1313 E. 60th St., Chicago, Ill. 1941. *xiv+659 pp.* $5.00.

A complete treatment of all phases of refuse-collection practice, reporting research of two years on experiences in more than 200 cities of different sizes. Phases of the subject covered include: refuse materials; preparation for collection; costs; methods; euipment; planning collection operations; supplemental transportation of refuse; special problems; European practices; municipal, contract, or private collection; financing; organization, and personnel; equipment management; reporting, cost accounting, and budgeting; and public relations. Appendices contain typical provisions of refuse-collection ordinances; data on practices in 190 cities; cost data; and a bibliography. Several chapters of this book, published separately, have been listed in previous issues of THE AMERICAN CITY.

Tax Delinquency

Tax Delinquency on the Rural-Urban Fringe.—By Alvin T. M. Lee, Agricultural Economist. An address delivered at the Annual Conference of National Tax Association, St. Paul, Minn., Oct. 15, 1941. *Apply to Bureau of Agricultural Economics, U. S. Department of Agriculture, Washington, D. C.* 14 *pp., multi.*

An anlysis of the problem of tax delinquency—its causes, effects, and possible remedies.

Tax Delinquent Lands in Cuyahoga County.—By William L. C. Wheaton. Regional Association of Cleveland, Housing Center, The Mall, Cleveland, Ohio. Publication No. 13. 1941. 48 *pp., mimeo.*

One quarter of the land of Cuyahoga is tax delinquent and subject to forclosure. This report analyzes this land—its quantity, value, type, and status; and makes recommendations for its handling from the broad point of view of the physical development of the whole community.

Neighborhood Redevelopment Law

Rebuilding Old Chicago—City Planning Aspects of the Neighborhood Redevelopment Corporation Law.—The Chicago Plan Commission, Chicago, Ill. 1941. 23 *pp.*

In an effort to stimulate operations under the Illinois Neighborhood Redevelopment Corporation Law, the Chicago Plan Commission has published this effective popular booklet, which describes blighted districts in Chicago and the problems they involve, reviews briefly the provisions of the new law, and presents possible neighborhood plans for three specific blighted areas in the city. Cost and rent charts for redevelopment projects are also presented. (See page 39 of this issue.)

City Rebuilding

Housing in Neighborhood Rehabilitation.—A Summary of Activities and Proposals.—By Edmond H. Hoben, Assistant Director, National Association of Housing Officials, 1313 E. 60th St., Chicago, Ill. 1941. 10 *pp., photo offset.* 50c.

In the last year there has been a greatly accelerated interest by public and private agencies and bodies of all kinds in the many-sided problems of urban blight and decay. In this report are summarized the principal activities and proposals of the last fifteen years, by agencies and bodies of all kinds, in the rehabilitation of these areas, with an evaluation of the present status of the problem. Following types of rehabilitation are covered; unassisted private reconstruction; direct public aid or action; indirect public aid; legislation; and stocktaking and standards.

Model City Charter

Model City Charter.—Fifth edition (complete revision), prepared by the Committee on Revision of the Model City Charter, National Municipal League, 299 Broadway, New York. 1941. 141 *pp.* $1.00.

In its earlier drafts, this Model City Charter has had a nation-wide influence in the modernizing of municipal administration under home-rule charters and in the improvement of state laws relating to the affairs of local governments. Since its original publication in 1900, the text of the Charter has been periodically revised in order that it might remain a modern document embodying the best that practical experience can offer. During the last ten years—a crucial period for municipal governments—great progress has been made in such important fields as administration, financial planning, fiscal control, personnel, city planning, zoning, housing and slum clearance, elections, public utilities, and special assessments. Some of the changes in these fields were included in the fourth edition published in 1933. In preparation for the present edition, during the last four years, all the subjects mentioned above have been restudied by groups of eminent specialists. On the basis of these studies, the Charter has been completely rewritten.

For a brief summary of the new provisions relating to planning and housing, see page 105 of this issue.

State and Local Fiscal Relations

State Supervision of Local Finance.—By Wylie Kilpatrick, Ph.D., Public Administration Service, 1313 E. 60th St., Chicago, Ill. Publication No. 79. 1941. *vii+165pp.* $1.25.

Primarily an inventory of the present status of state supervision of local finance, this report analyzes the various phases of the work of state-supervisory agencies, giving detailed tables showing variations in the different states. Chapters cover: State Organization for Supervising Local Finance; Accounting Systems and Standards; State Auditing of Local Accounts; Financial Reporting; State Control of Local Budgets and Expenditures; Supervision of Debt Incurrence and Retirement; Receiverships and Credit Facilities; and a final chapter, The Role of State Supervisory Agencies, which summarizes the author's views on the subject.

AMA Convention

Addresses Delivered at the 18th Annual Conference of the American Municipal Association, Stevens Hotel, Chicago, Oct. 23, 24, 25, 1941.—*American Municipal Association, 1313 E. 60th St., Chicago, Ill. Series AM Report* 24. 154 *pp., mimeo.*

Almost all the talks delivered at the annual conference of the American Municipal Association this year centered around the various problems city governments face as a result of defense activities. Other individual talks covered: AMA progress, 1931-41; taxation of municipal securities; the problem of conflicts in taxation; current trends in state-local fiscal relations.

Civilian Defense Publications

New pamphlets received from U. S. Office of Civilian Defense, Washington, D. C.:

Enrolled Volunteer Worker Groups for Civilian Protection. 11 pp.

Air-Raid Warning System. 18 pp.

Guide for the Training of Volunteer Nurses' Aides. (Prepared by the American Red Cross, in collaboration with the U. S. Office of Civilian Defense.) 4 pp.

Syllabus of Course of Instruction for Volunteer Nurse's Aides. (Prepared by the American Red Cross, as revised with the collaboration of the Medical Division of the U. S. Office of Civilian Defense.) 30 pp.

Water Supply

The Toledo Lake Erie Water Supply System.—The Toledo Citizens' Waterworks Dedication Committee, Toledo, Ohio. 1941. 57 *pp.*

The story of Toledo's water system, dramatically told with the aid of many photographs, in commemoration of the completion of this $10,000,000 project.

Engineers Handbook

Manual of Steel Construction.—American Institute of Steel Construction, 101 Park Ave., New York. Fourth Edition, 1941. 416 *pp.* $2.00.

The fourth edition of this useful book contains 15 pages of new data on such phases of the subject as cambering of rolled beams; beam-construction standards; allowable loads for angle and structural-tee connections; welding; and weights of building materials for ceilings, floors, roofs, and partitions.

Air-Raid Defense

Air Raid Precautions.—Reprinted by Permission of the Controller of His Britannic Majesty's Stationery Office, by the Chemical Publishing Co., Inc., Brooklyn, N. Y. First American Edition, 1941. 48 *pp.* $3.00 *from* THE AMERICAN CITY.

Compiled by British experts, and based on actual experiences during air raids, this book is divided into ten parts covering the following subjects: Rescue Parties and Clearance of Debris; Organization of Decontamination Service; Organization of Air Raid Wardens' Service; Structural Defense; Local Communications and Reporting of Air Raid Damage; Notes on Training and Exercises; Gas Detection and Identification Service; Protection of Windows in Commercial and Industrial Buildings; Inspection and Repair of Respirators and Oil-skin Clothing; and Care and Custody of Equipment.

Housing Study for Schools

A Housing Manual for Cincinnati School.—Prepared by Bleecker Marquette, Executive Secretary, and Ethel F. Ideson, Assistant Secretary, Better Housing League, Cincinnati, Ohio. 1941. *v+75 pp., mimeo.*

Suggestions and an outline for teaching housing in the upper elementary grades and high schools. Without presenting any particular theory of housing, it covers the principal aspects of the subject in a general way, by stating the needs, the effects of present conditions, and the obstacles to a desirable solution. Chapters cover: what we mean by "housing"; basic needs in housing; house planning; types of housing; financing; building methods; home ownership; family incomes and rent; management; the slum problem; housing for national defense; city planning, zoning, and garden cities; legislation; local ordinances; citizens' housing organizations.

Municipal Financial Data

Financial Statistics of Cities, 1938.—Prepared under the Supervision of C. E. Rightor, Chief Statistician for State and Local Government, Bureau of the Census, U. S. Department of Commerce, Washington, D. C. Apply to Supt. of Documents, Washington. 1941. *vii+298 pp., photo offset.* 75c.

Data, with summaries, on the 1938 financial transactions of the 94 cities having a population over 100,000, including revenues and expenditures, gross and net indebtedness, the assessed valuation of taxable property and the tax levies thereon, value of specified assets at the close of 1938, number of employees and amount of pay rolls, and other related information.

Photo Courtesy Fairchild Aerial Survey

☆ SAN FRANCISCO was founded in 1766, but much of the city is really only 35 years old, for in 1906 some 28,000 separate buildings and their contents were found destroyed after the Great Fire subsided.

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Department of Investigation Study

Investigating Municipal Administration—A Study of the New York City Department of Investigation.—By Harold Seidman, Ph.D., Director, Division of Coordination and Research, Department of Investigation. Institute of Public Administration, Columbia University, 261 Broadway, New York. 1941. xv+215 pp. $2.50.

Luther Gulick says in the Foreword of this book that among investigational agencies, none in this country is older or more important than the New York City Department of Investigation. The book contains a history of the Department from the time of its establishment almost seventy years ago as the Office of Commissioners of Accounts when its only function was to check on municipal finances, to the present time when its purpose is to inform the Mayor on all phases of municipal government. The Department and its work are analyzed and evaluated, and it is compared with other agencies of its type. The study has value not only as an account of a particular New York department, but because of the possible application of the Department's methods to government elsewhere.

Pensions

Financing State and City Pensions.—State and Local Government Special Study No. 15 Bureau of the Census, U. S. Department of Commerce, Washington, D. C. 1941. vi + 82 pp.

Detailed examination of public-employee pension systems of states and cities of over 100,000 population, for 1938. It investigates the following aspects of pension administration: the basis for financing pensions; pension-fund receipts; pension-fund payments; pension-fund assets; and state-local relations in pension administration. Data for individual cities and states are included, and selected references are listed.

Municipal Accounting Bureau

A Proposed Accounting Office for the Department of Public Works of the City of Los Angeles.—Bureau of Budget and Efficiency, 120 City Hall, Los Angeles, Calif. 1941. 44 pp., mimeo.

This is the first of two reports on an investigation of the possibility and feasibility of one combined accounting and personnel bureau for the department of public works of Los Angeles. It takes up the accounting function; describes past and present set-up in the department, organization and procedures, quarters and equipment; and analyzes the purposes and possible advantages of consolidated accounting, and makes recommendations for procedures.

Wages of City Employees

Report on Salary and Wage Trends in Various Cities.—By Norman A. Gill, Municipal Reference Librarian, Milwaukee. 1941. 17 pp., mimeo.

Comparative data from 20 cities of over 300,000 population, on trends in wages of municipal employees in 1941, and plans for 1942; summaries of special studies on municipal wages; and statistics on trends in costs of living in various cities. (See also p. 5.)

Planning Association Bulletin

FCPA in the News.—Fairfield County Planning Association, 925 Main St., Bridgeport, Conn. Vol. 1, No. 1, Oct., 1941. 4 pp., mimeo.

The first issue of a new planning news bulletin, telling informally of association activities and future program.

Property Tax Payments

The Instalment Payment of Real Estate Taxes in Wisconsin Municipalities.—League of Wisconsin Municipalities, 30 E. Johnson St., Madison, Wis. 1941. 20 pp., mimeo. $1.00.

Explanation of the Wisconsin law effective October 1, providing for the semi-annual payment of general property taxes on real estate.

Defense Housing Bibliography

Defense Housing in the United States—A Selected Reading List.—Compiled by Mary B. Devitt, Federal Housing Administration Library, Washington, D. C. 1941. 20 pp., mimeo.

Books, pamphlets and periodical references listed herein are conveniently arranged according to whether they are governmental or non-governmental publications, the former including a list of 1940 and 1941 Federal laws relating to defense housing, Congressional Hearings on the subject, a description of Federal agencies concerned with defense housing and a list of their publications.

Defense Housing

Low-Cost Houses.—Reprinted from Oct., 1941, issue of The Architectural Forum. 32 pp.

Site and house plans and descriptions of some of the well planned, large-scale defense housing projects built by various government agencies.

Planning in Foreign Countries

National Planning in Selected Countries—By Lewis L. Lorwin. Technical Paper, No. 2, National Resources Planning Board, Washington, D. C. Apply to Supt. of Documents, Washington, D. C. 1941. 173 pp., photo offset. 40c.

Includes four reports on planning in foreign countries: Public Works and Employment Planning in Germany, 1933-39; Wartime Planning in Germany, 1939-40; Stabilization Planning in Sweden, 1929-1939; National Planning in Latin America.

Other Reports Received

KANSAS CITY, MO.—Purchasing Organization and Procedures in Kansas City. 1941. 39 pp.

MANHATTAN, N. Y.—A Report, year ending June 30, 1941. 64 pp.

NEW MEXICO.—Organization for Civilian Defense. New Mexico State Council of National Defense, Santa Fe, N. Mex. 41 pp.

NEW YORK, N. Y.—Annual Report, Department of Public Works, 1940. 149 pp.

—Construction and Restoration of Monuments, Memorial and Historic Buildings. Department of Parks. 1941. 36 pp.

—Bibliography on Parks, Parkways, and Recreational Facilities, 1911-1941. Compiled by Municipal Reference Library, 2230 Municipal Building. Arax Jaboolian, Compiler. 1941. 29 pp., mimeo.

OGLESBY, ILL.—Semi-Annual Report, Half-year ending Oct. 31, 1941. 31 pp.

PASADENA, CALIF.—Annual Report, City Manager, year ending June 30, 1941. 57 pp.

PITTSBURGH, PA.—Bureau of Smoke Prevention Ordinance No. 344. Department of Public Health. 1941. 19 pp.

RHODE ISLAND.—Civil Air Regulations. 1941. 12 pp., mimeo.

—Application for Registration of Federal Aircraft Certificate and Federal Pilots Certificate. 1941. 2 pp., mimeo.

—Rhode Island Regulations Governing the Flying of Aircraft Models. 2 pp., mimeo.

—Rhode Island State Airport Rules and Regulations. 1 p.

A Letter from a Dean of Public Administration to His Graduates About the "Tools of Administration." By Lent D. Upson, Director, Detroit Bureau of Governmental Research, 5135 Cass Ave., Detroit, Mich. 1941. 12 pp., photo offset.

Conventions—When and Where

December 12-14.—Washington, D. C.
AMERICAN PUBLIC WELFARE ASSOCIATION. (Mayflower Hotel.) Dir., Fred K. Hoehler, 1313 E. 60th St., Chicago, Ill.

December 30.—New York City.
AMERICAN WATER WORKS ASSOCIATION—NEW YORK SECTION. Luncheon meeting. (Commodore Hotel.) Sec.-Treas., R. K. Blanchard, 50 W. 50th St., New York.

***January 12-14, 1942.—Washington, D. C.**
UNITED STATES CONFERENCE OF MAYORS. (Mayflower Hotel.) Exec. Dir., Paul V. Betters, 730 Jackson Place, N. W., Washington.

***February 16-19.—Seattle, Wash.**
ASSOCIATED GENERAL CONTRACTORS OF AMERICA, INC. M'ng Dir., H. E. Foreman, 222 Munsey Bldg., Washington, D. C.

***February 18-20.—Ann Arbor, Mich.**
CONFERENCE ON HIGHWAY ENGINEERING. (Michigan Union.) Sec., R. L. Morrison, Univ. of Michigan, Ann Arbor, Mich.

February 21-26.—San Francisco, Calif.
AMERICAN ASSOCIATION OF SCHOOL ADMINISTRATORS. Sec., S. D. Shankland, 1201 16th St., N. W., Washington, D. C.

***February 25-27.—Philadelphia, Pa.**
ASSOCIATION OF HIGHWAY OFFICIALS OF NORTH ATLANTIC STATES. (Benjamin Franklin Hotel.) Sec.-Treas., A. Lee Grover, State Highway Dept., Trenton, N. J.

***March 3-6.—Trenton, N. J.**
NEW JERSEY SEWAGE WORKS ASSOCIATION. (Stacy-Trent Hotel.) Sec., John R. Downes, Plainfield, N. J.

***March 2, Week of.—Memphis, Tenn.**
AMERICAN ROAD BUILDERS' ASSOCIATION. Engr.-Dir., Charles M. Upham, 952 Nat'l Press Bldg., Washington, D. C.

***April 27-30.—Washington, D. C.**
CHAMBER OF COMMERCE OF THE UNITED STATES. Sec., Ralph Bradford, 1615 H St., N. W., Washington, D. C.

May.—Indianapolis, Ind. (Date later.)
NATIONAL CONFERENCE ON PLANNING. Joint annual conference of American Society of Planning Officials, American Institute of Planners, the American Planning and Civic Association, and the National Planning Association. Conference Dir., Walter H. Blucher, 1313 E. 60th St., Chicago, Ill.

***May 7-9.—Walla Walla, Wash.**
AMERICAN WATER WORKS ASSOCIATION—PACIFIC NORTHWEST SECTION. (Marcus-Whitman Hotel.) Sec., Fred Merryfield, Oregon State College, Corvallis, Ore.

***May 15-16.—Toledo, Ohio.**
AMERICAN WATER WORKS ASSOCIATION—OHIO SECTION. Sec., T. R. Lathrop, State Dept. of Health, Columbus, Ohio.

***May 17-20.—Cleveland, Ohio.**
SMOKE PREVENTION ASSOCIATION. Sec., Frank A. Chambers, City Hall Square Bldg., Chicago, Illinois.

***May 20-25.—Hollywood, Calif.**
NATIONAL ASSOCIATION OF COUNTY OFFICIALS. Sec.-Treas., George E. Breitbach, Court House, Milwaukee, Wis.

May 24-27.—Philadelphia, Pa.
PENNSYLVANIA STATE ASSOCIATION OF TOWNSHIP COMMISSIONERS. (Benjamin Franklin Hotel.) Sec.-Treas., H. A. Fritschman, Upper Darby, Pa.

***June 10-13.—Los Angeles, Calif.**
NATIONAL ASSOCIATION OF HOUSING OFFICIALS. (Biltmore Hotel.) Dir., Coleman Woodbury, 1313 E. 60th St., Chicago, Ill.

June 21-25.—Chicago, Ill.
AMERICAN WATER WORKS ASSOCIATION. (Stevens Hotel.) Sec., Harry E. Jordan, 22 E. 40th St., New York.

***June 28-July 2.—Denver, Colo.**
NATIONAL EDUCATION ASSOCIATION OF THE UNITED STATES. Exec. Sec., Willard E. Givens, 1201 16th St., N. W., Washington, D. C.

***August 24-26.—State College, Pa.**
PENNSYLVANIA WATER WORKS OPERATORS' ASSOCIATION. Sec.-Treas., I. M. Glace, 22 S. 22d St., Harrisburg, Pa.

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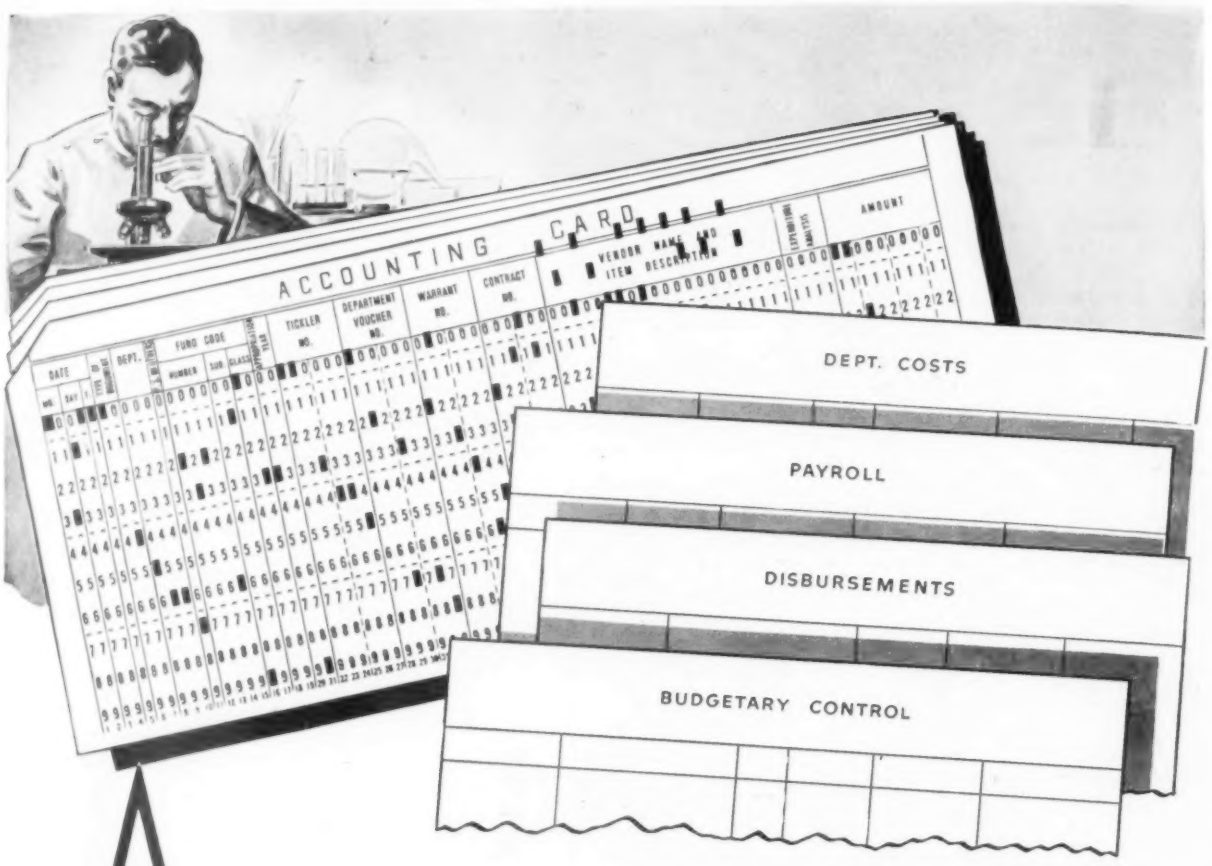
* First appearance of item on this page.



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News and Illustrations

Items of Interest to City, Town and County Officials, and Others Concerned with the Economical Construction and Efficient Operation of Public Improvement Undertakings

How to Get a Priority for Water-Works Needs

Realizing the vital importance of properly-maintained chlorination equipment to the defense program and to the health of the country, Wallace & Tiernan Co., Inc., Newark, N. J., has prepared a very helpful folder giving complete instructions on how to cover every order for water-works maintenance and repair equipment, or parts, with a priority.

If you have not already received a copy of the Wallace & Tiernan green folder "Priorities Procedure," write direct today, mentioning this item, and you will receive the folder and contents promptly.

Four Companies Join Asphalt Institute

Four asphalt-producing companies were elected to membership in The Asphalt Institute at the recent Board of Directors' meeting held in San Francisco, it has been announced by Herbert Spencer, President of the Institute. The new members bring the total of companies constituting Asphalt Institute membership up to twenty-nine.

The new member-companies are: Home Oil and Refining Co., Great Falls, Mont.; Husky Refining Co., Cody, Wyo.; Independent Refining Co., Billings, Mont.; and Yale Oil Corp., Billings, Mont. The Asphalt Institute, 801 Second Avenue, New York, is a national association of asphalt producers, designed to develop the product and extend its uses through promotion, engineering activities and research. In the national emergency, it has also been geared to fullest cooperation in the construction of airfields, access roads and the strategic military network.

Water Purification Without Chemicals

A completely automatic, self-contained purification plant has been developed by the Technicraft Engineering Co., Los Angeles, Calif. The unit, known as the "Sterozone," was designed for use in army camps and by troops on maneuvers, but has wide industrial and municipal applications.

The Sterozone unit has a rated capacity up to 9,000 gallons per hour. Raw water is pumped from the source through a filter to remove suspended matter, and then passed to an absorber chamber where ozone, generated by a high-frequency silent electric discharge, oxidizes the bacterial contamination and delivers sterile water that has no taste or odor. No supplies of chlorine gas or other chemicals are required.

Power is supplied from an automatic gasoline-engine-driven 10-kv, 220-V, 3-phase power plant, which is self-starting and self-regulating. All mechanism is driven by a 5-hp, 220-V, 3-phase electric motor, on which is direct-mounted the treated-water supply pump and coupling. Connected to the other end is the raw-water supply pump. Also driven from the motor shaft by V-belts are the compressor, cooling water circulating pump, and evaporative cooler. All these mechanical elements are mounted in a separate power chassis, vibration-insulated from the rest of the unit on a three-point rubber suspension, and carried on ball-bearing rollers for ease of inspection and removal for lubrication or maintenance.

Ozone is generated by the silent blue electric discharge between aluminum plates maintained at 13,000 volts by a 2.0-kva transformer. Ozonized air is injected directly into the absorber, through which it flows counter-current to the water in four separate stages. Diffusion, injection, turbulation and scrubbing obtain highly efficient absorption of the ozone. From the absorber, the treated water passes directly through the supply pump, at a pressure equivalent to a 50-foot head. Operation of the unit is fully automatic. A small synchronous electric motor drives time-dials which control the cycle and periodically reverse the raw-water filters and air dehydrators. The filter out of service is backwashed, and the dehydrator out of service is electrically regenerated.

For industrial and municipal applications, the Sterozone unit automatically supplies pure water at capacities from the merest trickle up to the full rated capacity of the equipment, without supervision except for the monthly lubrication. Where requirements are greater than 9,000 gph, units set up in parallel operate automatically to meet requirements, and automatically cut out when the requirements are lowered. Complete information and specifications of the Sterozone unit are available from the Technicraft Engineering Co., 5610 South Soto Street, Los Angeles, Calif.

Steel Pipe Protection Through Factory Process

To relieve the shortage of galvanized pipe and copper tubing, the Hill-Hubbell process of protecting steel pipe is now available for service lines. Furnished and applied by Hill, Hubbell & Co., Cleveland, Ohio, this pipe protection in combination with steel pipe embodies the same features as underground steel water mains. The interior and exterior protection is done in a manner to conform with AWWA Spec. 7A.6-1940.

This new steel service pipe offers Hill-Hubbell exterior "factory processed" coating-and-wrapping in sizes from ¾-inch to 11½-inch with special interior cement linings. Regular water-works enamel linings are available in sizes from 2 inches.

This Allis-Chalmers Model HD-7 tractor, owned by Lee County, Miss., is grading a site for a residential section one mile east of Tupelo, Miss. The tractor, powered by a 54-hp 2-cycle diesel engine, is pulling a two-wheeled Gar Wood scraper 10 hours a day on 20 gallons of fuel

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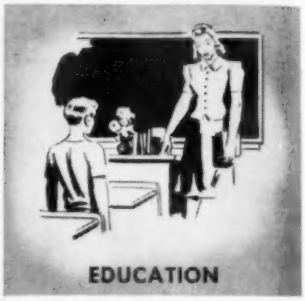
EDUCATION

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Hundreds of communities are finding it difficult to bear the additional expenses and responsibilities imposed upon them by expanded local industries or other defense activities.

Since further taxation is sometimes difficult, many municipalities are tightening up by adopting a more efficient tax billing and collection plan; by installing a budgetary plan that provides a better control of costs, expenditures and commitments in each department.

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Some of the crowd that inspected the Etnyre "Black Toppers" at the recent exposition of American-made road machinery in Mexico City, Mexico. The home office of E. D. Etnyre & Co., Oregon, Ill., and the export office in New York City, report they are busy preparing specifications and quotations in answer to requests from various road builders and government officials in Latin America

Fairbanks-Morse to Build New Diesel Engine Plant

Announcement has been made by Colonel Robert H. Morse, President and General Manager of Fairbanks, Morse & Co., 600 South Michigan Avenue, Chicago, Ill., that an appropriation of $5,500,000 has been authorized by the Federal Government for a new building and additional equipment and machinery at the Beloit, Wis., works of the company. The purpose of the new plant is to triple production of F-M diesel engines for the United States Navy,—engines which at the present time are providing both propulsion and auxiliary power for Navy submarines, cruisers, destroyers, aircraft carriers and other sea power.

The project will be completed under emergency priorities, and terms of agreement call for completion and large-scale production of marine diesels in about a year's time. The new building will be of concrete, brick and steel construction, with a length of about 660 feet, a depth of 460 feet, and a total floor space of more than 300,000 square feet. In addition to the men required for the construction work and installation of equipment, production in the new shop will give employment to between 1,200 and 1,500 additional factory workmen. The entire building and its machinery will be devoted to the manufacture of F-M diesel engines for the United States Navy.

Vibration-Proof Nuts Available for Covers

Following the successful use of its anchor-type nuts in aircraft construction, the Elastic Stop Nut Corp., 2332 Vauxhall Road, Union, N. J., now offers these nuts for blind-mounting applications to provide vibration-proof fastenings for removable plates used to cover hand holes, access and inspection openings. For these, the anchor nuts are permanently riveted to the inside of the structure. The bolts, which are inserted from the outside, pass first through the removable plate, thence through the structure into the stationary nuts.

These nuts are offered in a wide range of size, material, and thread system, every nut incorporating the basic Elastic Stop self-locking feature, a fiber-locking collar which is an integral part of each nut. This locking fiber prevents the bolt from becoming loose after it is installed in the nut, regardless of the severity of the vibration to which it is subjected. In such mountings, the manufacturer states that the bolts may be removed and replaced many times, the anchor nuts retaining their locking ability because of the resilient character of the fiber collar. Full information on the Elastic Stop self-locking principle, and a complete listing of the anchor nuts, are contained in a fully-illustrated catalog which will be sent upon request to the manufacturer, to those mentioning this item.

Unfailing Water Supply with Dual Power Pumps

The assurance of uninterrupted water supply twenty-four hours a day from deep-well turbine pumps is provided by dual drives, according to the announcement of engineers of Peerless Pump Co., 301 West Ave. 26, Los Angeles, Calif. Normally equipped with electric motor head, the secondary drive may be by right-angle gear, powered by a gas, gasoline or diesel engine or steam turbine. In the event of interruption of electric service, the stand-by plant can be started instantly, either by the operator or by completely automatic control, thus providing a never-failing source of supply.

Other types of dual drive pumps have steam turbines as primary power, with internal combustion engines connected with the secondary right-angle gear. Either source of power operates independently of the other. Further details concerning all types of dual-power pump drives may be obtained without obligation from Peerless Pump Co.

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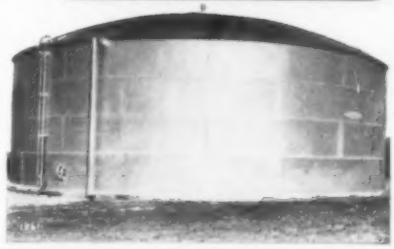

Steel Reservoirs

P-DM Steel Reservoirs and Standpipes provide greatest economy in water storage—are permanently water-tight, may be erected at any time of year, and for maintenance require but a periodic coat of paint. All types and sizes, up to 4,000,000 gallons. Bulletin No. 102.

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Collecting revenues and keeping track of expenditures constitute accounting. Both are performed by your Sundstrand Municipal Accounting Machine.

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To get accurate figure facts about any appropriation, you set up four amounts on the adding-machine keys; then you write the new postings and hit the "motor bar." . . . You can put your hands in your pockets or reach for a candy while the machine automatically prints for you the TOTAL APPROPRIATION—UNENCUMBERED BALANCE—BALANCE OF UNPAID ENCUMBRANCES—TOTAL EXPENDITURES—TOTAL ENCUMBRANCES—BALANCE OF CASH.

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Colonel W. F. Rockwell

Emco Executives Called for Military Service

Three executives of the Pittsburgh Equitable Meter Co., Pittsburgh, Pa., have recently been called for active military duty in different branches of the service.

Colonel W. F. Rockwell, President of the company, was called for extended active service early in October, reporting to Washington, D. C., where he has been serving as Assistant to the Chief of the Motor Transport Division. Captain A. E. Higgins, Vice-President of the company, originally called in mid-summer for active duty in the Air Corps, has been temporarily deferred due to certain national defense activities in which the Pittsburgh firm is engaged. For the past eight months, Captain J. R. Sproat of the sales staff has been serving with the 176th Field Artillery in command of Battery "F" at Fort Meade.

A Respirator with Improved Filter Design

The new, improved M. S. A. single filter Dustfoe respirator is completely described in a bulletin just issued by Mine Safety Appliances Co., Pittsburgh, Pa. The featured improvement of the Dustfoe is the new single filter, which replaces the two-part (felt screen and cellulose) filters used previously. This new filter is all in one piece, giving protection against an even broader range of dusts and mists, according to the manufacturer. The filter is more porous on the outer side, so that the larger dust particles are filtered out first, thus preventing rapid build-up of breathing resistance through clogging of the filter.

Other features of the M. S. A. Dustfoe respirator are retained, according to the bulletin. The compact, light-weight unit offers low breathing resistance and full vision in every direction. A protective filter cover prevents contamination of the filter by grease and dirt from hands and equipment. A foolproof exhalation valve provides drainage; and the formable facepiece of the unit may be shaped to fit individual face contours. For cleaning, the respirator can be completely disassembled without tools in a few seconds. Every part is interchangeable and, except for the filters, can be washed and sterilized. The inexpensive single throwaway filters permit a new filter with each cleaning.

Copies of the new Dustfoe Bulletin, No. CM-5, may be secured by writing direct to Mine Safety Appliances Co., Braddock, Thomas and Meade Streets, Pittsburgh, Pa.

Jos. E. McKay Dies, Oldest Meter Salesman

Joseph E. McKay, the oldest salesman on the staff of the Neptune Meter Co., died suddenly at the age of 74 at his home in New York City on November 6. From July, 1902, until his retirement in December, 1939, because of ill health, Mr. McKay represented Neptune Meter Co. in a territory embracing New York City, Westchester County and Long Island.

Multiple-Duty Pumps Work in Any Position

A new type of pump which operates upside down or right side up or at any angle without affecting its usefulness or efficiency, and which requires a minimum of installation space, has been announced by Kimball-Krogh Pump Co., Division of Food Machinery Corp., 301 West Avenue 26, Los Angeles, Calif. These Type MKE pumps will handle any kind of liquid against very high heads, according to the manufacturer, and are especially adaptable to station-pump service and for municipal high-pressure water systems.

The rated capacity of the pump ranges from 75 to 800 gpm against heads of 200 to 800 feet. A one-piece, carbon steel shaft with the proper distance between the double-row deep-groove thrust bearing at the pump end of the motor and the center of the outside impeller, gives smooth, vibrationless operation. The pump and motor have been designed as one compact integral unit. Bulletin No. 150-A describes these pumps in detail.

Better Lubrication for Gas Engines

The October, 1941, issue of *Lubrication*, a technical publication devoted to the selection and use of lubricants, published by The Texas Company, 135 East 42nd Street, New York, contains a valuable discussion of ways and means of improving the lubrication of gas engines, starting with a discussion and description of various types of engines, their fuel systems, timing, the cooling system, and exhaust system. The balance of the article tells what lubricants do to overcome many of the difficulties experienced in the operation of gas engines.

Copies of the October, 1941, issue of *Lubrication* may be secured direct from The Texas Company by mentioning this review.

Municipal officials should join the American Public Works Association—It belongs to them—Write us for membership application blanks.

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REFLECTOR BUTTONS
at Danger Points
More and more miles of America's highways depend on Cataphote Reflector Buttons to control traffic at night! For example, the Pennsylvania Turnpike shown above directs motorists with a lane of Cataphote Niteway Outliners. Below is the San Francisco-Oakland Bridge effectively illuminated with Cataphote Center Lane Markers. Greater brilliance and durability make Cataphotes ideal for Stop, Slow, Curve, Turn and Danger Signs. Write for Details.
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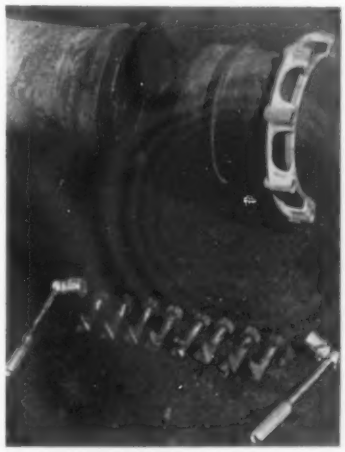

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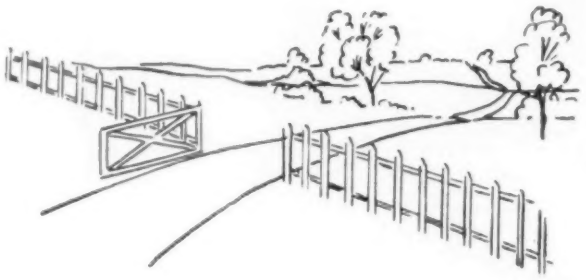


PROGRESSIVE utility executives know that to maintain the best possible public relations, each customer must be dealt with on an individual and personal basis.

For many years Remington Rand has cooperated with the public utility industry in the development of records, systems and procedures to enable public utilities to attain this concept of service.

Recently, Remington Rand was privileged to have worked with the Michigan Consolidated Gas Company, Detroit, in an installation based on the above premises. Now, we are pleased to announce the creating of a forty-six page brochure —"Of The People, By The People, For The People."— which graphically portrays the benefits and results secured by the Michigan Consolidated Gas Company.

We have mailed this book to many City Officials. However, if you have not as yet received your copy, please write us at once and we will forward your free copy immediately. Public Utility Division, Remington Rand Inc., Buffalo, New York.

REMINGTON RAND INC., BUFFALO, NEW YORK

One of the New Line of Owen Rehandling Buckets

New Rehandling Bucket for Inside Cranes

Improved design is a feature of the four-line rehandling bucket recently announced by the Owen Bucket Co., 6030 Breakwater Ave., Cleveland, Ohio. Suitable for any line spacing on all models of overhead cranes, such as are used for the rehandling of rubbish and garbage at incinerators, and for the rehandling of coal from storage pits at power plants, this new bucket is available in various capacities and dimensions for rehandling all types of materials.

Further information on this and other types of buckets in the Owen line may be secured by interested city officials and professional engineers direct from the manufacturer or from THE AMERICAN CITY Magazine.

New Catalogs Issued on Crushers and Screens

Iowa Mfg. Co., Cedar Rapids, Iowa, has recently brought out a new series of bulletins and specification sheets, each designed to give full information regarding one of the units of Cedarapids equipment, chiefly in the crushing and screening field.

Two types of sized stone plants, popular with counties and municipalities, are shown in Bulletin No. SCO-1.

The Cedarapids Pitmaster portable crushing plant is described in a new single-sheet bulletin, PIT-1.

A small portable washing plant is described in a single-sheet specification bulletin, PWP-1.

The Cedarapids 25 x 40 portable jaw crusher and heavy-duty steel apron rock feeder is featured in Bulletin PP-1, while Bulletin SCR-1 gives the specifications of the Cedarapids one-piece portable screening plant with truck-loading conveyors.

The last bulletin of the series features the new Cedarapids Traction Broom, giving ratios of travel and broom speed. This is Bulletin TB-1.

Change in Name of General Fire Truck Corp.

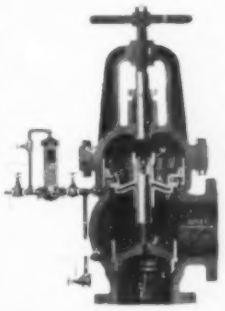
Effective November 1, 1941, the name of The General Fire Truck Corp. was officially amended to The General Detroit Corp. According to the announcement, the management and personnel of the organization remains the same; and it will continue to offer to its patrons the same service and quality which have characterized thirty-five years of experience in the manufacture of fire-protection equipment.

Stormy weather was completely ignored cs Wm. H. Correale, First Deputy Commissioner, New York City Department of Water Supply, Gas and Electricity, questioned Alan Johnstone of Wallace & Tiernan Co., Inc., about the details of W & T's new mobile water sterilizing unit during a recent demonstration in Battery Park, New York City, to show its effectiveness for hooking up to broken mains after any air raid or other emergency

Triple-Acting Non-Return Valve

This valve will automatically cut in a boiler whenever its pressure equals line-header pressure; it will isolate a boiler automatically whenever its pressure, from any cause, is lower than line-header pressure; and it will prevent steam flow from the boiler in event of sudden drop of line-header pressure below the boiler pressure, by means of differential shot pilot valve functioning.

Write for specifications.



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35 miles without a stop-light!

—and *concrete* all the way

One of the nation's outstanding examples of safe highway design is New York City's new Belt Parkway. Three features greatly reduce the chances of accidents on this heavily traveled artery:

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2. Limited access—parallel service roads for local traffic.
3. Safe roadway surface assured economically for decades by a divided pavement of skid-resistant *Concrete*.

Life-saving, time-saving express arteries like Belt Parkway are an economic necessity in every congested area today. When will your community begin to enjoy the traffic relief and business growth they bring? The need is urgent!

Send today for new booklet, *"Express Highways —How They Serve Millions of Motorists,"* mailed free on request in the U. S. or Canada.

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A national organization to improve and extend the uses of concrete . . . through scientific research and engineering field work

The No. 35 California Bench Made by Art Concrete Works

Concrete-End Park Benches Attractive and Practical

The attractive design and practical features of California benches are receiving growing recognition throughout the country. These benches, manufactured by Art Concrete Works, 366 South Fair Oaks Avenue, Pasadena, Calif., are made in a series of designs, the latest of which are the No. 35 bench and the No. 1 bench.

In the No. 35 design, illustrated here, the wooden seat strips pass through the concrete ends and are securely attached by wooden wedge pins or by neat metal lugs. In the newer No. 1 design, the wooden seat and back strips rest upon the concrete ends and are neatly and inconspicuously bolted to them. The advantage of this type is that the full length of the seat strips may be used for sitting.

Complete benches, or concrete ends only, may be obtained from this company's plants in Oakland, Calif., Jacksonville, Fla., and Birmingham, Ala.; or the cast-iron molding equipment for producing the concrete ends may be purchased from them at reasonable cost, for use in territories not adjacent to any of these plants.

Variable Speed Drive for Variable Mounting

A new V-belt variable-speed transmission which may be used for transmitting power to different types of chemical feeder equipment with infinitesimal variations in speed, has been announced by Stand-and Transmission Equipment Co., 416 West 8th Street, Los Angeles, Calif. This JFS-CUB is designed for all "A" section V belt applications and for speed ranges up to 3.3-1. Smooth sided pulleys are used, rather than the interlocking type. The manufacturer claims that the patented positive belt alignment feature of this transmission makes it possible to mount the CUB in any possible position without impairing its function or throwing belts out of alignment. It is of machined and balanced cast iron construction, has forced lubrication of the special bronze bearings, and a free-end pulley spindle to permit the easy installation of belts. Both pulleys are on one side of the pivotal mechanism which permits the motor pulley and driven pulley to be almost directly in line.

What to Do About RUST in Your Water Tank

You have THREE choices:

1. **Let 'er rust** (and soon you'll be buying a new tank)
— OR —
2. **Paint the inside annually** (your paint bill will just about equal the annual deterioration under **Choice No. 1**)
— OR —
3. **Prevent rust from forming with RUSTA RESTOR**, the well-known means of positive prevention—an electrical device that prevents rust by merely reversing the forces that cause it. This is the least expensive method of the three . . . **Don't you think it's worth considering?**

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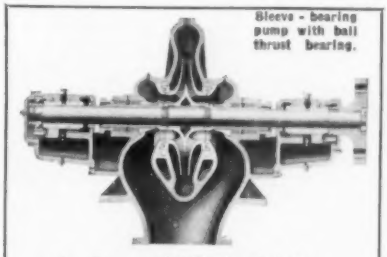

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The De Laval Engineering Department has concentrated continuously during 40 years upon the problems of centrifugal pump design and application. This specialization places at the user's command a complete, modern line of highest quality pumps and a vast store of knowledge and unsurpassed expertness in solving pumping problems. State conditions of use and ask for Publication P-3223.

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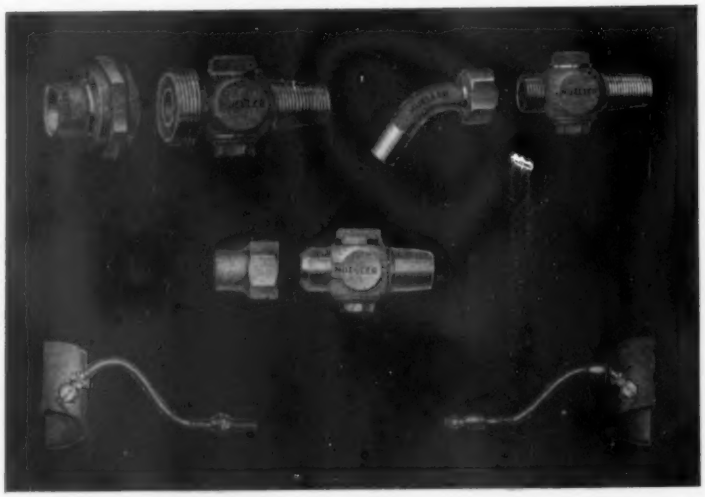

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During December we hope you will remember to mention THE AMERICAN CITY.

The New L-M Spreader Arm

A New Spreader Arm for Street Lights

A new easily-applied and inexpensive spreader arm, adaptable to any type of overhead luminaire, has been announced by Line Material Co., Milwaukee, Wis. The manufacturer claims four advantages for this new spreader arm, as follows: 1. it minimizes swaying in the wind; 2. it gives a rigid mounting, holding the luminaire in the desired position, which is important where refractors are used; 3. because the point of attachment is high and near the center of suspension, it minimizes tipping due to the weight of leads and to wind pressure; 4. it reduces the maintenance cost of leads by increasing the clearance between the insulator and the reflector, and it prevents lead wires from resting on 20-inch open-type reflectors. Further information about the No. 95-G spreader arm may be obtained from the manufacturer.

Worn Water Wheels Effectively Repaired with Stainless Steel

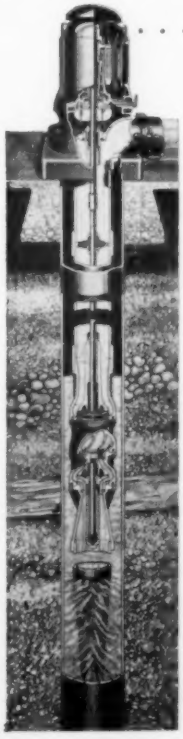
Worn water wheels can be repaired without removing them from the pit, and the wheels restored to their original efficiency, according to recent experiments by engineers of the D. J. Murray Mfg. Co., Wausau, Wis. In repairing a water wheel the badly eroded sections were cut away, right in the pit, and replaced with new pieces of stainless clad. Stainless steel band was applied to the inside of the casing at the points of erosion.

The water wheel repaired is located on the Fox River in Wisconsin. It generates 1800 kw and is of cast iron, to which the stainless clad sections were applied. The repaired wheel, it is said, will outlast a new wheel of conventional design, as the points of erosion are now protected by stainless steel.

Peerless Pumps

meet every specification

. . . and then some!



LOW COST. Peerless Pumps on the basis of identical specifications cost no more, often less.

MODERN DESIGN. Peerless Pumps' many exclusive engineering advantages are your guarantee of top-flight quality underground.

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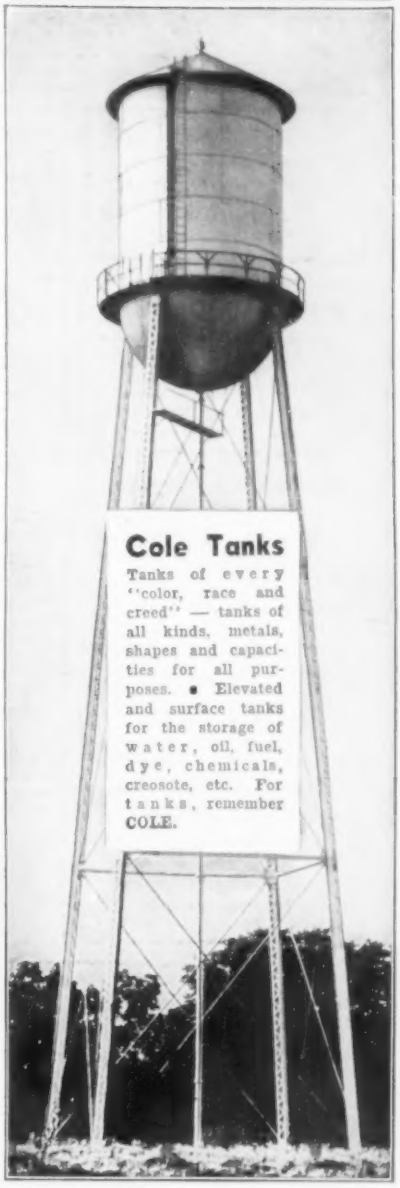

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848 849 850 851 852 853 854 855 856 857
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879 880 881 882 883 884 885 886 887 888 889

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New York City's Lamps

836. You can obtain illustrations and full details about the lamps New York City uses for street, traffic, and fire-alarm lights from Dept. CS of Slater Electric & Mfg. Co., Inc., 728 Atlantic Ave., Brooklyn, N. Y.

Signal Systems Controlled by Traffic

837. One of the more modern developments in methods of controlling traffic is that of vehicle-actuated control systems. Vehicle-actuated equipment operates in response to impulses received directly from the traffic through detectors installed in the pavement near the intersection. Bulletin No. 252 of Eagle Signal Corp. illustrates many of the more commonly used types of vehicle-actuated equipment, with brief descriptions of the operating characteristics, as well as Eagle pedestrian-actuated equipment. A page of sketches showing typical intersections, with the suitable installations, is furnished. This new bulletin is available on request from Eagle Signal Corp., Moline, Ill.

Various Types of Snow-Plows

838. A snow-plow folder that should prove very helpful to municipal officials who must decide on the types of plow best suited for use in their communities is Bulletin No. 1878 of Good Roads Machinery Corp., Kennett Square, Pa. The folder offers clear illustrations and short descriptions of the different models of Good Roads Champion snow-plows, and in addition a chart showing moldboard length and height, plowing width, lifting height, and other dimensions for the different models, as well as rated tonnage of trucks recommended for use with these plows and the standard equipment they include.

25 Years in Construction Machinery Field

839. An attractive souvenir booklet has been issued by Barber-Greene Co., Aurora, Ill., to celebrate its silver anniversary. It contains a history of the company and illustrations of early and present models of Barber-Greene belt conveyors, bucket loaders, snow loaders, coal loaders, ditchers, bituminous mixers and finishers, and traveling plants. Additional interesting facts in the back of the booklet include a summary of Barber-Greene's efforts in national defense; and photographs of employees' organizations.

Aiding Public Transit

840. Public transit has a big defense job in moving defense workers to their jobs and home again. Methods of staggering working hours to smooth traffic peaks, loading zones and planned traffic-control systems are most important. Send your problems to General Electric, Schenectady, N. Y., for consideration.

Industrial Tractors for City Work

841. The Model I-B Allis-Chalmers tractor is built specially for municipal work, since its frame makes it possible to attach or detach various types of equipment rapidly. It is used with a rotary broom or plow for snow removal, with a highway mower for cutting weeds, or pulling gang mowers for parks and golf courses. Its power take-off will operate an air compressor, pumps or other equipment. Complete information may be secured from the Tractor Div., Allis-Chalmers Mfg. Co., Milwaukee, Wis.

What Are Your Chlorine Needs?

842. Today a city must watch its use of chlorine for the sterilization of water or sewage with greater care than ever before. Health is of prime importance, and the sterilization of water and sewage with chlorine is an important contribution of the city to community health. Are your sure of your chlorine service? Complete information on chlorine service may be secured from Michigan Alkali Co., Ford Bldg., Detroit, Mich.

Road Maintenance and Snow Removal

843. Baker equipment for earth moving, road maintenance and snow removal includes bulldozers, gradebuilders, scrapers, road disks, rooters, maintainers and snow-plows. Bulletins on any Baker product will be sent promptly by The Baker Mfg. Co., 503 Stanford Ave., Springfield, Ill.

Street Flusher Has Many Uses

844. Besides effective street flushing, other uses of the Etnyre sanitary street flusher include sewer cleaning, tree spraying, fire fighting, flushing snow and slush, surface sprinkling, hauling water and pumping out basements. Bulletin 306 of E. D. Etnyre & Co., Oregon, Ill., describes this unit and its various applications.

Dry Chemical Feeders

845. Full information is available from Syntron Co., 420 Lexington Ave., Homer City, Pa., on its "Gravimetric" feeder machines, for dependable dry chemical dosage by weight, and its "Volumetric" feeder machines, for automatic dry chemical dosage from flow meter or pH indicator control.

All Truck and Trailer Equipment

846. Gar Wood truck and trailer equipment for municipal requirements includes dump bodies and hoists, garbage units, winches and cranes, tanks, flushers, sprinklers and road machinery. Bulletin 27 describes the Load-Packer, for collecting and hauling garbage and rubbish, and Bulletin 12 features a variety of other collection units. Gar Wood winch and crane, hoist and dump body units are described in Bulletins W147, W141A, and 25. For street flushers, ask for Bulletin FL-601 and general Bulletin 602-T; and for a complete line of Trailbuilders, bulldozers, tamping rollers, rippers and scrapers, request road machinery literature. All bulletins are available free of charge from Gar Wood Industries, Inc., 7924 Riopelle St., Detroit, Mich.

Two-Way Radio for Public Safety

847. Every public official should have a copy of "Motorola Radio Communication Equipment," which gives valuable information on how cities and towns all over the country have solved their radio communication problems. It also contains information on the latest developments in F.M. two-way mobile radio equipment. Your complimentary copy will be sent promptly by Galvin Mfg. Corp., Chicago, Ill.

Constant-Current Regulators Cut Lighting Costs

848. The Wagner Type Y-H constant-current regulator furnishes constant current to the lamp circuit from zero load up to full load and even overloads. Bulletin TU-180, Part 8, which may be obtained from Wagner Electric Corp., 6400 Plymouth Ave., St. Louis, Mo., explains the outstanding features of this new type of regulator.

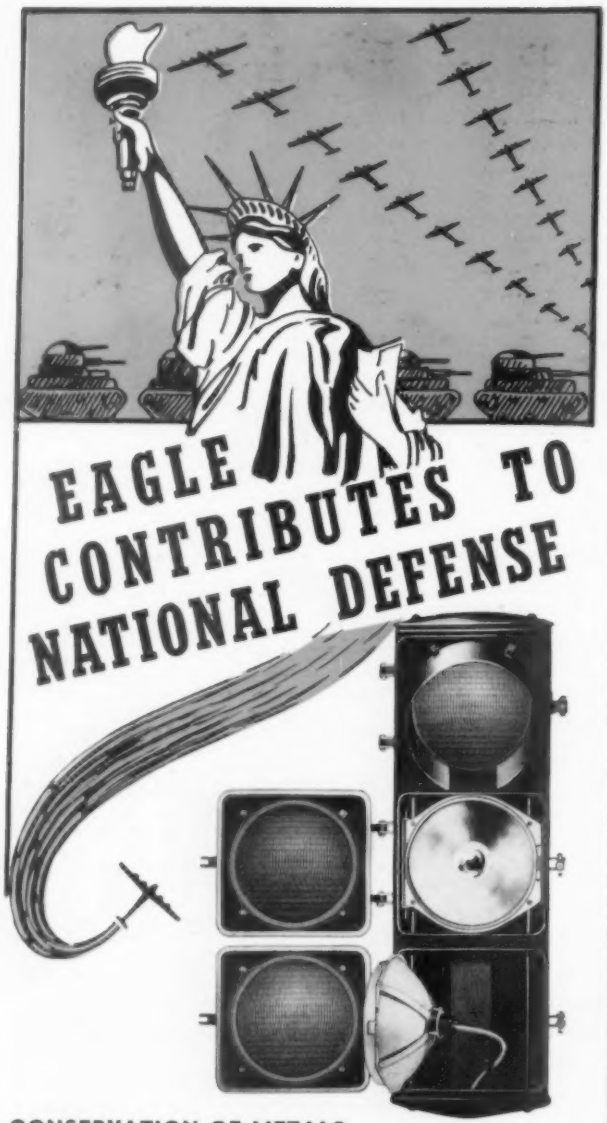
New Development in Street Lighting

849. By using a glass-prism reflector, Line Material Co., illuminating engineers have utilized a new principle in concealed light-source luminaires for street lighting, which results in high light-output, permanent efficiency, and economy of maintenance. The new illustrated booklet LMB-4131 gives details and complete information on the L-M Prismalite luminaire. Write for your copy now to Line Material Co., General Offices, Milwaukee, Wis.

Modern Street-Sweeping

850. The Van Dorn street sweeper collects dirt in handy packages for curb collection, and is of modern, light-weight and easily-handled design. The Van Dorn Iron Works Co., 2685 E. 79th St., Cleveland, Ohio, will be glad to send literature; and if you wish it a demonstration may be arranged at your convenience.

(Continued on page 18)



CONSERVATION OF METALS NECESSITATES SUBSTITUTIONS . . .

Eagle now offers

A MORE RUGGED AND EFFECTIVE SIGNAL

The new "Eaglelux" signal is of die-formed steel construction—rust proofed by Government-approved process. This construction retains all of the outstanding exclusive features of the "before defense" type units.

Insist on the following features when buying signals:

1. Sectional Construction
2. Dust-Tight Optical Units
3. Anti-Sun Phantom Optical Assemblies
4. Floating Reflector Hinged to Body
5. I.T.E. Specification Lenses
6. Light Weight
7. Attractive Appearance

Ask for Bulletin 2278

Traffic Control Aids Civilian Protection.

EAGLE

EAGLE SIGNAL CORPORATION

Factory and General Office, MOLINE, ILL. Executive Sales Office, BOSTON, MASS.

WHICH OF THESE CATALOGS WOULD YOU LIKE?

(Continued from page 17)

New Edition of Liquid Chlorine Booklet

851. A 6th edition of "Liquid Chlorine," a technical treatise on the properties, packages, safe handling and uses of chlorine, has been announced by The Pennsylvania Salt Mfg. Co., 1000 Widener Bldg., Philadelphia, Pa. Much detailed and tested information is given in this bulletin under the general headings: equivalents; properties of chlorine; liquid chlorine containers; piping and fixtures; uses of chlorine; preparation of chlorine compounds; analytical methods; and handling chlorine leaks. The new edition contains added information on improved water chlorination practice, and an appendix discussing chlorine taffy, which should be of particular interest to public health workers. The booklet's colorful cover design illustrates some of the current conceptions of the structure of the chlorine atom and of the origin of the chemical and physical properties peculiar to this element.

Illuminated Traffic Signs

852. Traffic-handling today is a 24-hour-a-day job for highway signs and markers, and you will want to be sure that the signs in your locality are visible both day and night. Cataphote reflector buttons for low-cost illumination meet strictest specifications, and their brilliance is guaranteed for three years. Write for details to Western Cataphote Corp., Toledo, Ohio.

Steel Pipe for Municipalities

853. The latest Alco Products Bulletin, 1030, issued by American Locomotive Co., 30 Church St., New York, depicts numerous Alco products used by municipalities, which include waste heat boilers and water heaters, pressure tanks, caisson cylinders, steel pipe piling, tunnel shields, tunnel interlinings, tunnel shaft doors and frames, venturi meter tubes, and electric welded water pipe 22 inches diameter and up, either plain, dipped or with spun coating.

Filters for Sewage Effluents

854. The "Municipal" sand filter for the further treatment of sewage clarifier effluents, which greatly improves the final effluents of sewage-treatment plants, is described completely in an 8-page bulletin recently issued by Underpinning and Foundation Co., Inc., 155 E. 44th St., New York.

Handbook on Water Services

855. American Smelting and Refining Co., Lead Products Dept., 120 Broadway, New York, will be pleased to send a free copy of its handbook, "How to Install Tube-Loy for Water Service," telling how connections may be made with either wiped joints, flare fittings, or sweat fittings. The booklet is well written and profusely illustrated, showing the best methods of making connections.

Fences Protect Public Property

856. Stewart iron or chain link wire fence offers a lifetime of dependable, low-cost service in the protection of any public property. Other Stewart products for public property include settees, folding chairs, wire mesh partitions, trash cans, and flagpoles. Please mention the products in which you are interested when requesting literature from The Stewart Iron Works Co., Inc., 821 Stewart Block, Cincinnati, Ohio.

Use of Mimeograph by City Departments

857. In may cities throughout the country, all civic departments have found effective uses for the Mimeograph duplicator. In "The American City Speaks," a new portfolio prepared for your use by the manufacturers of Mimeograph, many practical ideas are set forth—for improving civic service, saving money, and winning community support. For your free copy, write to A. B. Dick Co., Dept. N-1041, 720 W. Jackson Blvd., Chicago, Ill.

Stop Leaks in Pools, Dams, Reservoirs

858. A booklet of the American Colloid Co., 363 W. Superior St., Chicago, Ill., entitled "Effective Water Stoppage," gives many interesting facts concerning the nature and uses of Volclay, a special kind of bentonite clay. This natural hydrous silicate of alumina, produced in the Black Hills of Wyoming and South Dakota, has been used with remarkable results in stopping water losses in ponds, lakes, canals, dams, concrete pools, building foundations, cofferdams, and under many other conditions. Besides giving much concise information, including prices, the booklet lists 26 other bulletins which are available, covering special applications of Volclay. Ask for Data 229 when requesting your copy.

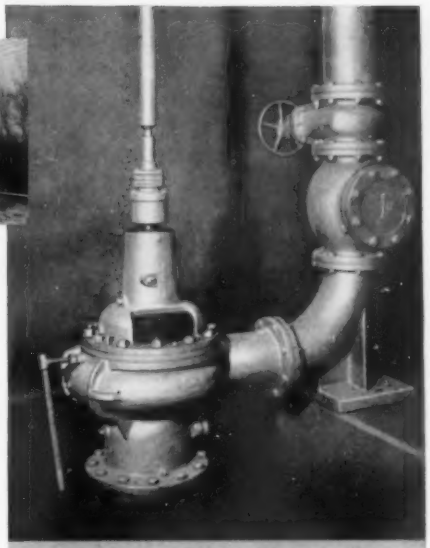
Steady Performance of Water Meters

859. When you invest in water meters, make sure that the operating mechanism will guarantee a long, efficient life. Pittsburgh Equitable Meter Co., Pittsburgh, Pa., and its National Meter Div., Brooklyn, N. Y., manufacture a most complete line of water meters, whose performance record is attested by users all over the country. Your request for literature will receive prompt attention from Pittsburgh Equitable Meter Co.

(Continued on page 20)

28% MORE WATER for ONLY 7% MORE COST!

City of Midland, Michigan, Modernizes Pumping Equipment ... Meets Increased Industrial Water Demands ... With New Money-Saving Allis-Chalmers Pump!



LOOKING INTO THE PUMP PIT at the Midland, Michigan, water pumping station, we see the new Allis-Chalmers 12" x 8" Vertical Low Lift Pump with 50 H.P. motor.

THEY NEEDED more pumping capacity in Midland, Michigan, to take care of growing industrial needs. But though they required a lot more water . . . they hoped to avoid adding too much extra expense!

Paul Stegeman, Midland water superintendent, knew it was impossible to get any greater efficiencies out of the old equipment. He recommended a new Allis-Chalmers pumping unit.

That was a year ago . . .

Today, Mr. Stegeman points with pride to the records. Where the old pumping equipment had required 70 amperes to pump 3,750,000 gallons of water per day . . . now, the new Allis-Chalmers pump takes but 75 amperes at the same power factor to pump 4,800,000 gallons . . . a gain of over 1,000,000 gallons at a cost of only 5 amperes!

Not only that — with the old equipment, the pump had to be stopped and the bearings torn down about twice a year. Now, due to the improved design of the new Allis-Chalmers pump, this expense is eliminated.

Meet Increased Water Needs With Allis-Chalmers Pumps!

That's modern efficiency for you! But the best part is that what was done in Midland can be done in any city or town in the country!

With industrial water requirements increasing greatly under defense demands, NOW is the time to modernize your pumping equipment!

To get the complete story about Allis-Chalmers Pumps, see the pump engineer in our nearby district office. Or write *today* to Allis-Chalmers, Milwaukee, Wisconsin. A-1387

Over 90 Years of Engineering Superiority Work for You When You Specify Allis-Chalmers!

ALLIS-CHALMERS
MILWAUKEE · WISCONSIN

Catalogs Filled with Information

(Continued from page 18)

Street Sanitation Equipment

860. The Elgin Corp., 501 Fifth Ave., New York City, will be glad to forward complete descriptive literature on any of the following equipment for efficient street sanitation: the Elgin 20 and Elgin Junior for street sweeping, the Elgin Eductor for catch-basin cleaning, and the Refuse-Getter for modern, sanitary garbage collection.

Water Meters with Frost Bottom Design

861. When winter causes breakage of American and Niagara water meters, the patented frost bottom design of these Buffalo-made meters assures correct breaking pressure. If you have not considered this matter lately, let Buffalo Meter Co. give you the facts. Address the company at 2902 Main St., Buffalo, N. Y.

A Dependable Small Concrete Mixer

862. Bulletin No. 206 of The T. L. Smith Co., 2835 N. 32d St., Milwaukee, Wis., tells about the 3½-S Smith Tilter, a small tilting mixer with the same general design as the larger Smith Tilters. Text and illustrations clearly describe its special features, including feed-chute charging, short drum-tilt, "end-to-center" mixing action, and extreme portability.

Non-Skid, Cold Laid Pavements

863. "Colprovia Paving Processes for Non-Skid, Cold Laid Pavements" is the title of an attractive and informative new booklet issued by Colprovia Roads, Inc., 183 E. Main St., Rochester, N. Y. The booklet brings to the reader's attention the many Colprovia processes of asphalt paving available, and describes briefly the characteristics of the different mixtures produced under the various processes. A number of good photographs show Colprovia roads throughout the country, and some construction and maintenance operations, as well as several of the other uses of Colprovia, such as for airport runways, walks and play areas, and tennis courts. Several useful tables, both for new construction paving and for resurfacing old bases, are given in the back pages.

Complete Information on a Flow Meter

864. Bulletin No. 35-83 of the American District Steam Co., North Tonawanda, N. Y., is devoted to the Adsco flow meter, which is made in four types, comprising eight models. Eleven pages of the booklet are given over to text and diagrams completely describing this flow meter, its construction, principles of operation, and uses. The last page gives detailed specifications. The bulletin can be obtained by writing direct to the company and specifying the bulletin number.

Sludge Drying and Incineration

865. A new, revised bulletin on the C-E Raymond System of sludge drying and incineration, a product of Combustion Engineering Co., Inc., which is marketed exclusively, in the sanitary engineering field, by The Dorr Co., Inc., is far more complete than the earlier edition issued two years ago. Of special interest is a series of wash drawings, and three- and four-color flow diagrams, in which the functional workings of the system are made especially clear by the use of colors. A very detailed tabulation giving design data on twelve installations appears on page 8. Designing engineers and others wishing a free copy of the bulletin should write to The Dorr Co., Inc., 570 Lexington Ave., New York.

Loaders or Shovels for Wheeled Tractors

866. Circular No. 36 is a leaflet just issued by the White Mfg. Co., Elkhart, Ind., furnishing concise descriptions and illustrations of White front-end shovels for industrial tractors. The extensible boom feature of White mechanically operated, front-end tractor attachment is but one of several advantages described in this circular. Copies will be sent free by the manufacturer on request.

Practical Ice Control Data

867. Engineers and public officials will be interested in the latest manual on street and highway ice control issued by the Calcium Chloride Association. This new, fully illustrated bulletin, "Skidproofing Icy Roads and Streets," is based on the practical experiences of nearly every ice-fighting state, and covers all phases of ice-control practice from organization of the skid-proofing program to actual use of methods, materials, and equipment. Copies of this handbook, in convenient pocket size, are available without charge by addressing the Calcium Chloride Association, 4145 Penobscot Bldg., Detroit, Mich., and asking for Bulletin No. 27.

Catalog of Paving Equipment

868. The new pocket-size catalog of Aeroil Burner Co., Inc., West New York, N. J., covers tar and asphalt kettles, cut-back and emulsion sprayers, asphalt tool and pavement heaters, concrete curing machines, torches, burners, and other road-building and repair and maintenance equipment of this company. Ask for Catalog No. 240.

Modern Accounting in Local Government

869. For many years, Burroughs Adding Machine Co. has made an intensive study of municipal accounting and has developed many new and modern machines and methods for handling today's municipal problems in less time, with less effort, at less expense. For complete information, write to this company at 6071 Second Ave., Detroit, Mich.

Vitrified Clay Sewer Pipe

870. The Clay Sewer Pipe Association, Oliver Bldg., Pittsburgh, Pa., has issued a leaflet stating that manufacturers of clay pipe, which is unaffected by priorities, are prepared to fill all requirements without delay or red tape. For a copy of this leaflet, or for complete information on vitrified clay pipe, write direct to the Association.

Police Signaling Systems

871. A catalog of police signaling systems, subtitled "Crime Costs Billions," has just been made available by The Gamewell Co., Newton Upper Falls, Mass. Subdivisions of the contents include: functional characteristics, planning the system, police central-station equipment, recording equipment, police patrol boxes, police re-call signals, standards and pedestals for boxes, a schematic diagram of the central police district, a schematic diagram of the precinct type system, and a discussion of why such a system is an essential municipal utility. Exceptionally clear illustrations add to the value of the text. Request Catalog P203 direct from The Gamewell Company.

Free Postage Computers

872. A number of municipalities are using the postage meter not only to save money but also in an effective way to get over slogans and timely bits of information as well. Write Pitney-Bowes Postage Meter Co., 169 Walnut Street, Stamford, Conn., and receive a free postage computer.

Contract Cleaning of Clogged Pipes

873. Pittsburgh Pipe Cleaner Co., 1016 Suismon St., Pittsburgh, Pa., with branches in Baltimore, Schenectady, New York City, Chicago, Philadelphia, and Johnstown, Pa., is prepared to undertake contracts for cleaning steel, cast-iron, terra-cotta, rubber-lined or other kinds of pipe in many different systems and installations, including water lines, condensers, drain lines, sewers, oil piping, etc. A new leaflet entitled "Your Clogged Pipe and Fittings Can Be Cleaned" is available on request.

Float-and-Cable-Operated Weir Meters

874. The most recent leaflet received from The Foxboro Co., Foxboro, Mass., treats in text and illustrations the mechanical construction and applications of Foxboro weir meters and other float-and-cable-operated indicating, recording, and integrating instruments. Request Bulletin A-298.

Effective Policing Through Motorcycles

875. According to a recent report of the Harley-Davidson Motor Co., Milwaukee, Wis., more than 3,500 American cities and towns use Harley-Davidson police motorcycles; and many take advantage of their full effectiveness in all-around police work through the combined use of motorcycles and Servi-Cars. The exceptional versatility of these latter vehicles makes them efficient for traffic control and regulation in congested downtown districts. Harley-Davidson will be glad to answer your inquiries about all models.

Rugged Tractors and Road Machinery

876. On the construction of Army airports, the rugged dependability of Caterpillar diesel tractors, engines, and road machinery is being proved. From the first rough grading through to the finished runways, these units handle the job with speed and economy. Information on any of these Caterpillar units may be obtained without obligation from Caterpillar Tractor Co., Peoria, Ill.

Experienced Water-Producing Engineers

877. Layne & Bowler, Inc., Memphis, Tenn., is a firm adequately equipped and widely experienced in designing, manufacturing, and installing well-water systems for municipalities, industries, mines, and irrigation. If you need more water, write or wire this company for specific information.

Power Plus Smooth Riding in Motorcycles

878. The spring frame feature of Indian "Police Special" motorcycles gives better control, greater safety, and less fatigue for the man in the saddle. Indian Motocycle Co., Springfield, Mass., will gladly answer your inquiries about this fast-driving and smooth-riding police motorcycle.

(Continued on page 24)

2,000,000 Gallons Daily

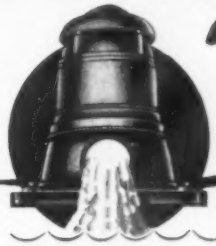
"Best Well Ever Installed" Said Clintonville, Wisconsin

NEVER in its history had Clintonville, Wisconsin been able to obtain more than 250 gallons of water per minute from any of a number of their wells. The city was growing and the need for a larger supply of water was becoming urgent. Layne Hydrologists made a survey, a contract was closed and the result is a well producing 1400 gallons per minute, or over 2,000,000 gallons per day. Thus again Layne has been outstanding in success where others have failed.

Layne installed their famous gravel wall well—a type of installation that size for size and depth for depth usually doubles and often quadruples the amount of water produced from a given formation. They differ materially from the so called "gravel packed" well and are the most efficient known.

Layne can develop a new, larger and more economical well water supply for you. They can do the work promptly, thus expediting your expansion and production plans. Why not ask Layne to give you further details. For literature, address

LAYNE & BOWLER, INC.
Memphis, Tenn.



Nation-Wide Service

LAYNE-ARKANSAS CO. . STUTTGART, ARK.
LAYNE-ATLANTIC CO. . . . NORFOLK, VA.
SAVANNAH, GA. . . . . ORLANDO, FLA.
LAYNE-CENTRAL CO. . . MEMPHIS, TENN.
LAYNE-NORTHERN CO. . MISHAWAKA, IND.
LAYNE-LOUISIANA CO. LAKE CHARLES, LA.
LAYNE-NEW YORK CO. . NEW YORK CITY,
AND PITTSBURGH . . . . . PA.
LAYNE-NORTHWEST CO. MILWAUKEE, WIS.
LAYNE-OHIO CO. . . . . COLUMBUS, OHIO
LAYNE-TEXAS CO. . . . . HOUSTON AND
DALLAS . . . . . TEXAS
LAYNE-WESTERN CO. . KANSAS CITY, MO.
CHICAGO, ILL. . . . . OMAHA, NEBRASKA
LAYNE-WESTERN CO. OF MINNESOTA
MINNEAPOLIS . . . . . MINN.
LAYNE-BOWLER NEW ENGLAND COMPANY,
BOSTON . . . . . MASSACHUSETTS
INTERNATIONAL WATER SUPPLY, LTD.
LONDON . . . . . ONTARIO, CANADA

The above companies are affiliates of Layne & Bowler, Inc., Memphis, Tenn.

LAYNE PUMPS & WELL WATER SYSTEMS

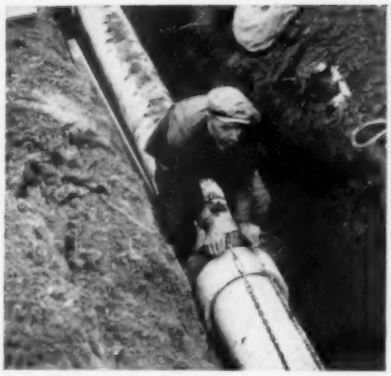
● IF YOU NEED MORE WATER—Layne will provide competent engineers who will cooperate in checking water bearing formations, size of wells necessary and the type of pumps that will operate on the lowest cost per million gallons. No obligation.

WORLD'S LARGEST WATER DEVELOPERS

During December we hope you will remember to mention THE AMERICAN CITY.

Solve all of these water-pipe problems . . .

HANDLING COSTS—Transite's long, light lengths keep handling costs low. Small trucks can carry large loads to the job. All but the largest sizes of pipe can be easily unloaded by hand without mechanical equipment.



INSTALLATION COSTS Assembly is easy and rapid with the Simplex Coupling. A prefabricated, "packaged" joint, this coupling can be quickly and economically assembled even by unskilled crews.

WET TRENCHES—So simple is the assembly of the Simplex Coupling used with Transite that the pipe can be jointed easily even in wet trenches. Installation goes fast even under the most difficult conditions.

CORROSIVE SOILS—Made of asbestos and cement, Transite Pipe offers exceptionally high resistance to all forms of soil corrosion. Even in acid or alkaline soils, Transite installations are providing continued low maintenance.

TUBERCULATION—Being non-metallic, Transite can never tuberculate. This means that no allowances need be made for reduced delivery capacity due to this cause. As a result, it is often possible to use smaller, less expensive pipe.

JOINT LEAKAGE—Joint leakage in Transite lines is kept to a minimum, for Simplex Couplings form tight, flexible joints that stay tight in service . . . provide maximum protection against costly water losses.

DEEP TRENCHES—Because of Transite's uniformity, the correct class of pipe for any trench can be accurately determined. Its uniform strength and durability permit it to withstand the weight of heavy backfill.

WIDE SWEEPS—No special fittings are needed to form wide sweeps or curves with straight lengths of J-M Transite Pipe. The Simplex Coupling provides unusual flexibility . . . allows a deflection of 5° or more at every joint.

. . . by taking advantage of this BASIC ADVANCE IN WATER-LINE ENGINEERING

IF YOU'RE NOT now faced with some of these problems, chances are you will be on your next water line. Even if you encounter them all, you can still keep costs low—assure fast, economical installation and permanently efficient service by using J-M Transite Pipe.

The many advantages of Transite are a result of its asbestos-cement composition. Light in weight, easy to handle and assemble, it makes important savings at installation. In the ground, Transite needs little or no maintenance . . . for it is strong and durable, immune to electrolysis, highly resistant to corrosion. Being non-metallic, Transite cannot tuberculate. It maintains its initial high flow-coefficient of C-140 in service. This feature frequently permits the use of smaller, less expensive pipe, for there is no need to allow for decreases in carrying capacity caused by tuberculation.

Cities, towns and villages all over the country are finding that water systems can be installed more rapidly, operated more efficiently and maintained more economically when Transite Pressure Pipe is used.

• • •

For full details, write for brochure TR-IIA. And for facts on better sewage disposal at lower cost, write for the Transite Sewer Pipe brochure TR-2IA. Johns-Manville, 22 E. 40th Street, New York, N. Y.

ELECTROLYSIS—Transite Pipe contains no metal . . . is completely immune to electrolysis. As a result, it can be laid immediately alongside street railway or power lines with permanent freedom from electrolytic corrosion.

VIBRATION—When water lines must be laid in locations where vibration is heavy, the flexibility of the Simplex Coupling helps assure a tight line throughout the years . . . offers maximum protection against joint leakage.

JM PRODUCTS

Johns-Manville TRANSITE PIPE

AN ASBESTOS PRODUCT

for efficient, economical water and sewer lines

When you write for that catalog, kindly mention THE AMERICAN CITY.

HERE'S JUST WHAT CALCIUM CHLORIDE DOES FOR

COLD WEATHER CONCRETE!

1—**REDUCES COST**—Cuts delays between operations . . . saves on fuel, heaters and canvas . . . permits quicker finishing and earlier release of forms.

2—**CUTS SETTING TIME**—National Bureau of Standards tests show actual time of initial and final set are reduced ⅔ when calcium chloride is used.

3—**PRODUCES HIGH EARLY STRENGTH**—For example, calcium chloride increases one day strength of 40 degree concrete by 300% as compared to same concrete without calcium chloride . . . increases 3 day strength 117%, 7 day strength 75%.

4—**INCREASES FINAL STRENGTH**—National Bureau of Standards and P. C. A. tests show calcium chloride increases ultimate strength by from 7 to 12%.

5—**ADDS EXTRA PROTECTION**—Solvay Calcium Chloride in the mix gives *extra* protection against frozen concrete by speeding set and increasing early strength!

6—**PROVIDES DEPENDABLE CURING**—Assures positive, uniform curing in all concrete, including paving, structural and products.

7—**SHORTENS PROTECTION PERIOD**—by speeding set and increasing early strength, Solvay Calcium Chloride cuts winter protection period in half . . . shortens danger period.

8—**PERMITS LESS FORMS**—Earlier release of forms permits quick reuse . . . fewer needed.

9—**INCREASES DENSITY AND HARDNESS**—Solvay Calcium Chloride permits reduction of water-cement ratio . . . means fewer water voids, denser, more moisture—resistant concrete.

48 PAGE BOOK GIVES NATIONAL BUREAU OF STANDARDS AND OTHER TESTS . . . MAIL COUPON FOR FREE COPY.

use SOLVAY CALCIUM CHLORIDE with all PORTLAND CEMENTS

SOLVAY SALES CORPORATION • 40 Rector St., New York, N. Y.

Gentlemen: Kindly send me your 48 page book "Calcium Chloride and Portland Cement."

Name.....

Affiliated with.....

Address.....

City.....*State*.....61-1241

WHICH OF THESE CATALOGS WOULD YOU LIKE?

(*Continued from page 20*)

New Catalog of Sewer-Cleaning Tools

879. Flexible Sewer-Rod Equipment Co., 9059 Venice Blvd., Los Angeles, Calif., has announced a new catalog describing its complete line of sewer-cleaning equipment, which now includes a new rubber pipe plug for plugging off sewers and manholes for repairs, relining, etc.

Recording Instruments for Sewage Works

880. A new bulletin, No. 73-1, has been issued by The Brown Instrument Co., Wayne & Roberts Aves., Philadelphia, Pa., entitled "Brown Instruments for Sewage Sludge Digestion Plants." This bulletin presents a very complete description of the use of Brown instruments to provide maximum efficiency of operation of the sludge plant at lower cost, and covers liquid level recorders, temperature controllers, pyrometers, and flow meters.

Calcium Chloride for Roads and Runways

881. The Calcium Chloride Assn., 4145 Penobscot Bldg., Detroit, Mich., has recently issued a booklet designed especially for military and civil authorities, titled "Soil-Aggregate Stabilization and the Use of Calcium Chloride for Military Roads and Airport Runways." This booklet, No. 26, covers the fundamental phases of dust-laying, surface consolidation, and base stabilization, and contains examples of actual experiences in defense work.

Forms for Making Concrete Pipe on the Job

882. Quinn pipe forms produce uniform concrete pipe of high quality on the job. The heavy-duty forms, in sizes for any diameter pipe from 12 to 84 inches, tongue-and-groove or bell-end, in any length, are backed by over 30 years of service to contractors, municipal departments, and pipe manufacturers. Medium-duty forms are also available, for making pipe 12 to 60 inches in diameter. Write for complete information on prices and construction features to Quinn Wire & Iron Works, 1623 12th St., Boone, Iowa. An estimate on your pipe-form needs will be furnished on request if you give the size of your job.

A New Test Plug

883. The "Hold Firm" test plug, for testing cast iron, steel, transite, soil and concrete pipe lines as they are laid, withstands 300 pounds hydrostatic pressure. A descriptive circular and complete information will be furnished promptly by Test Plug Mfg. Co., Skokie, Ill.

Rubber Rings for Pipe Joints

884. Hyde-ro rubber rings for packing all B. & S. cast iron pipe joints, which are quickly installed without necessity for skilled labor, are now available for 4-, 6-, 8-, 10- and 12-inch cast iron pipe. Ralph H. Hyde, Box 1, Campbell, Calif., will supply complete information on request.

Underdrain Systems for Water Treatment

885. Aloxite Brand porous underdrain systems for rapid water filters and softeners are discussed in revised Engineering Bulletin No. 2 of The Carborundum Co., Niagara Falls, N. Y., manufacturers of abrasive and refractory materials. This bulletin treats, under separate headings, the history of this type of filter bottoms, its development, advantages, filter design and construction, methods of installation, technical properties, physical properties, operation, and standard specifications for porous underdrain plates. Section drawings illustrate typical filter designs utilizing underdrain plates of various kinds.

A Simple, Practical Deep-Well Pump

886. The unique helical action of the Hi-Lift pump, manufactured by Peerless Pump Div., Food Machinery Corp., Los Angeles, Calif., delivers water simply, positively and economically with even, continuous flow from deep wells as small as 4 inches in diameter, without impellers, plungers, pistons or valves. Its capacity ranges from 500 to 3,500 gallons per hour with small variation, regardless of lift or pressure. Literature may be obtained by writing to the manufacturer.

Skid-Safe Roads

887. Tractionized Tarvia is recommended by The Barrett Co., New York City, for smooth-riding, long-lasting roads that provide skid-safe motoring, at any sane speed, in both wet and dry weather. Write to The Barrett Co. for information about good roads at low cost.

Free Book on Drainage Practice

888. Gohi corrugated pipe provides drainage structures to safeguard highways, railway road beds and airports. A copy of the 72-page Gohi book on drainage practice will be sent free, without obligation, to those writing to Gohi Culvert Mfrs,, Inc., Newport, Ky.

Exact Record of What Your Trucks Do

889. The Service Recorder Co., 1375 Euclid Ave., Cleveland, Ohio, reports that over 100,000 trucks are now equipped with the Servis Recorder, which keeps an accurate check on their activity, idle time, delays and overtime. A booklet will be mailed free on request.

It's a Wizard In a Blizzard!

There's no "tie-up" in the city, township or county that's equipped with Baker Snow Plows. The milkman, bakery man and school buses go sailing over their routes—Joe Machinist gets to his defense job on time. Municipal airports "stay on the flight." Bakers move bigger drifts with less effort—they don't push the snow, they roll it. It's all in the curve of the moldboard. They're simple to mount on any truck, easy to adjust for cutting height, ruggedly reinforced to buffet frozen, packed man-high snow.

Defense must not bog down. Now, more than ever, you need Bakers to keep vital roads and streets open. Contact your Baker dealer today! Send for Bulletin 829.

THE BAKER MFG. CO.
303 Stanford Avenue, Springfield, Illinois

There's a Baker Snow Plow for every snow condition—"V" type, tripping blade reversible and one-way plows for trucks, tractor "V" plows with hydraulically controlled side wings and wheeled tractor "V" and blade sidewalk plows. Send for Bulletin 820 on Side Wing Tractor "V" Plows; Bulletin 819 on Sidewalk Plows.

BAKER

The Modern Tractor Equipment Line for
EARTH MOVING
LEVELING AND GRADE BUILDING
SNOW REMOVAL
ROAD MAINTENANCE

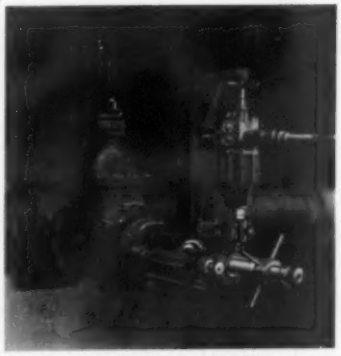
SMITH

WATER WORKS SPECIALTIES AND SUPPLIES

Defense-minded these days?

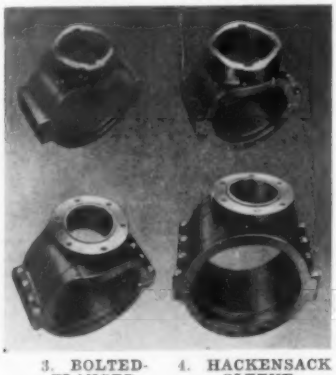
Do not forget the old maxim, "It's better to be safe than sorry!" SMITH Water Works Equipment goes right on giving dependable service in WAR time, in PEACE time, and in all the IN-BETWEEN times!

If increased demands for water (due, perhaps, to the new defense industries in your Town, or an army camp or naval base nearby) necessitate your planning new pipe lines and other water works extensions, keep SMITH in mind for valves and hydrants, valve inserting machines, tapping machines, tapping sleeves, tapping valves and hat flanges, water meters, and other water works equipment DESIGNED FOR DEPENDABILITY.



ABOVE: Smith Tapping Machines, for making branch connections to water and gas mains under pressure, have been standard equipment throughout the United States since 1889.

1. CLAMPED 2. BOLTED



3. BOLTED-FLANGED 4. HACKENSACK SLEEVE

BELOW, AT LEFT: Smith Tapping Valve with flanged joint (used with Tapping Sleeves Types III & IV above).

BELOW, AT RIGHT: Smith Tapping Valve with bayonet joint (used with Sleeves Types I & II above).

ABOVE: Tapping Sleeves, for making pressure connections to AWW standard mains, classes A, B and C, and for pressures up to 150 pounds — made in four types, as shown.

THE A. P. SMITH MFG. CO.

East Orange, N. J.

Branches

7 So. Dearborn St. Chicago, Ill.

901 Wm. Oliver Bldg. Atlanta, Ga.

409 Texas St. El Paso, Texas

524½ First Ave. So. Seattle, Wash.

59 Oak Vale Ave. Berkeley, Calif.

315 N. Crescent St. Flandreau, S. D.

LEADITE

FOR JOINTING CAST-IRON WATER MAINS

Melted and Poured ***No Large Bell-holes to Dig***

Saves at Least 75%

Leadite is shipped in powder form, packed in sacks of 100 lbs. net each
Leadite tested and used for over 35 years ● Leadite joints improve with age

Be sure it is Leadite and accept no imitations

THE LEADITE COMPANY

Girard Trust Co. Bldg., Philadelphia, Pa.

No Caulking

STANDARD CHOICE

For more than three-quarters of a century Ludlow Double-Disc Gate Valves and Ludlow Slide Gate Hydrants have been the standard and unfailing choice of the water works industry.

Send for free catalog No. 201, which illustrates the complete Ludlow line of water works and sewerage equipment.

The LUDLOW VALVE MFG·CO·INC·TROY·N·Y·

QUINN PIPE FORMS

HAND or WET PROCESS

Make concrete pipe on the job with Quinn Pipe Forms. They can be handled by less experienced labor and produce uniform concrete pipe of highest quality. Quinn Pipe Forms make pipe conforming to A.S.T.M. requirements as to wall thickness and other standards.

Quinn Heavy-Duty Pipe Forms are built to give more years of service — sizes for any diameter pipe from 12 to 84 inches—tongue and groove or bell end pipe—any length. Backed by over 30 years of service in the hands of contractors, municipal departments, pipe manufacturers.

HEAVY DUTY PIPE FORMS

Our Heavy-Duty type with Adjustable Locks is shown above. Quinn Heavy-Duty Forms are also available with a new wedge-type lock.

MEDIUM DUTY PIPE FORMS

Meet the demand for low-cost equipment that produces a uniform quality of pipe in smaller amounts. For making pipe 12 to 60 inches in diameter—any length.

WRITE TODAY

Get complete information on prices and Special Construction Features of Quinn Pipe Forms. Give us size of job for estimate on your pipe form needs. Also manufacturers of Quinn Concrete Pipe Machines for making pipe by machine process.

QUINN WIRE & IRON WORKS 1623 12th ST. BOONE, IA.

One of Best Investments Ever Made"

SAYS W. E. POPE OF ENID, OKLAHOMA'S TWO MODEL W-SPEED PATROLS

ENID OFFICIALS — C. W. Pelton, Street Commissioner, (left) and W. E. Pope, Street Department Foreman, shown here with one of their W-Speed Patrols.

JOHN D. BROWN
WATER COMMISSIONER

CHAS. WALKER
MAYOR

City of Enid, Oklahoma
COMMISSION FORM OF GOVERNMENT

October 23, 1941

Allis-Chalmers Manufacturing Company
Tractor Division
Milwaukee, Wisconsin

Gentlemen:

We have been using two of your W-Patrols for maintaining the city streets and have found them to be ideal for our work. We have a number of unpaved streets and alleys and find that they grade and maintain them to our entire satisfaction.

I have had about thirty years' experience with construction and grading equipment and at first thought these machines would never be able to do our work, but I am pleased to say they have far exceeded my expectations, and they really handle everything we've got.

They are cheap to operate, handle easily in tight places, and do practically as much work as our larger motor graders and at considerably less cost.

Since we have had these machines, more of our streets are in better shape, and we have had far fewer complaints from the residents. We feel that the purchase of these two W-Speed Patrols is one of the best investments our department has ever made.

Yours truly,

W. E. Pope

W. E. Pope
Foreman, Street Department

BLADE DOWN with BROOM UP or BROOM DOWN with BLADE UP—you may operate either way. Note above photos. Enid, Oklahoma uses their W-Speed Patrols for sweeping, and street and alley maintenance. Also, will be used to blade snow from gutters this winter so it can be picked up with loaders. Tank on rear of Patrol feeds water ahead of brush to settle dust.

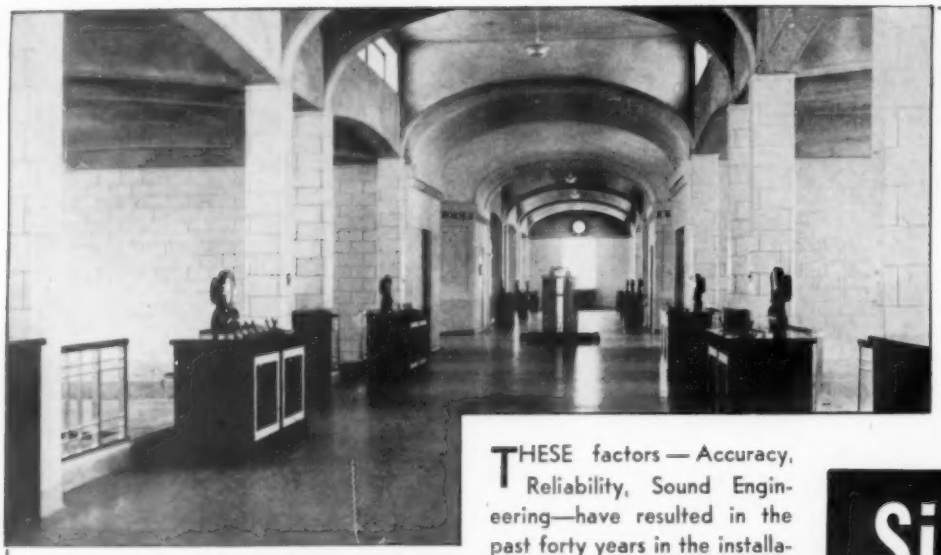
OVER 50% MORE ECONOMICAL — W-Speed Patrols maintain at ½ to ⅓ cost of large motor graders . . . savings are even greater on narrow streets and in alleys — short-turning radius enables them to swing about at will and concentrate on a certain section of work. Fuel consumption is small, too; Enid, Oklahoma reports only one gallon an hour used.

MAINTAIN • SWEEP • PLOW • MOW • HAUL

ALLIS-CHALMERS
TRACTOR DIVISION · MILWAUKEE · U. S. A.

MODEL W-SPEED PATROLS

3 FOR THE PRICE OF 1 LARGE MOTOR GRADER



SIMPLEX
for
Accuracy
•
Reliability
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and Sound
Engineering
in
FILTRATION
PLANT
EQUIPMENT

THESE factors — Accuracy, Reliability, Sound Engineering—have resulted in the past forty years in the installation of Simplex Rate of Flow Controllers, Gauges, Venturi Meters in the world's finest filtration plants.

First to develop the Direct-acting Controller, the Master Control, the Bell-shaped Float, and the Sand Expansion Indicators, the cardinal policy of Simplex is to increase its usefulness to the waterworks profession by continued research, design and cooperative measures with both designing and operating engineers.

SIMPLEX PLEDGES ITS ENTIRE FACILITIES TO MEET THE DIVERSE PROBLEMS OF THE NATIONAL EMERGENCY.

Simplex
Valve & Meter
Company
68TH & UPLAND STS.
PHILADELPHIA

THE MACHINE OF A DOZEN USES

Send for Bulletin No. 306 Today!

ETNYRE

Sanitary STREET FLUSHERS

E. D. ETNYRE & CO. Main Office & Plant OREGON, ILLINOIS

No dishes for us to do

"Out-of-town friends dropped in unexpectedly before dinner. I had nothing in the house but my husband saved the evening by taking all of us to a hotel for dinner. No dishes to do. Was I happy!"
Mrs. Grace Watson, Birmingham, Ala.

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STOP AT A **HOTEL**

VISIT OUR NEW BAR AND TERRACE

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AS FRIENDLY AS YOUR HOME—OFFERS DIVERSION FOR EVERY MEMBER OF THE FAMILY

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GOHI PIPE CORRUGATED

One thing in highway construction you need have no fears about. When GOHI Corrugated Pipe is installed, it's there for keeps! It is enlisted for the duration of the highway, and it will never *soldier* on the job! GOHI possesses the ability to stand up under the most severe highway conditions: heavy traffic, settling and shifting fills, alternate freezing and thawing, abrasion and corrosion. So when roads are protected by GOHI it's a safe bet that the drainage structure will outlast the road! Get copy of 72-page illustrated GOHI Book, of interest to all road builders. Write the fabricator nearest you.

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Bancroft & Martin Rolling Mills Co.	S. Portland, Me.
Denver Steel & Iron Works Co.	Denver, Colo.
The Lane Pipe Corporation	Bath, N. Y.
Dixie Culvert Mfg. Co.	Little Rock, Ark.
St. Paul Corrugating Co.	St. Paul, Minn.
The Newport Culvert Co.	Newport, Ky.

GOHI Pipe meets Copper-Bearing Pure Iron requirements in all specifications published by nationally recognized specifying authorities.

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Cast Iron Pipe

PLAIN CAST OR SPUN CENTRIFUGAL

Cast Iron Pipe and Special Castings, Bell and Spigot, Flange, Flexible Joint, Culvert, Milled and Plain End Tubes, Cylinders, Flanged and Bell and Spigot Fittings, High Pressure Fire Service Pipe, Warren Short Body Specials, Threaded End Pipe.

Size 2 to 84-inch

Pipe manufactured in accordance with standard specifications adopted and approved by water works associations and engineers.

Warren Foundry & Pipe Corp.
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"RAIN for the Asking"
A catalog that explains in detail the various types of watering equipment designed to keep your parks and parkways always fresh and green. Skinner System engineering and consulting service has solved every conceivable type of watering problem. We are equipped to handle your watering problems better at lower cost. A card or letter brings you the catalog and details of our service. No obligation.
Pioneer
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The Skinner Irrigation Co., 447 Canal St. Troy, Ohio

EXIT Bang and Rattle ! of Manhole Covers

TAPAX

TAPAX is a PATENTED product—U. S. Pat. No. 2,650,050—supplied on steel reels for convenient use.

the ORIGINAL cushion for noisy, worn manhole covers is the quick, easy, lasting, economical solution!

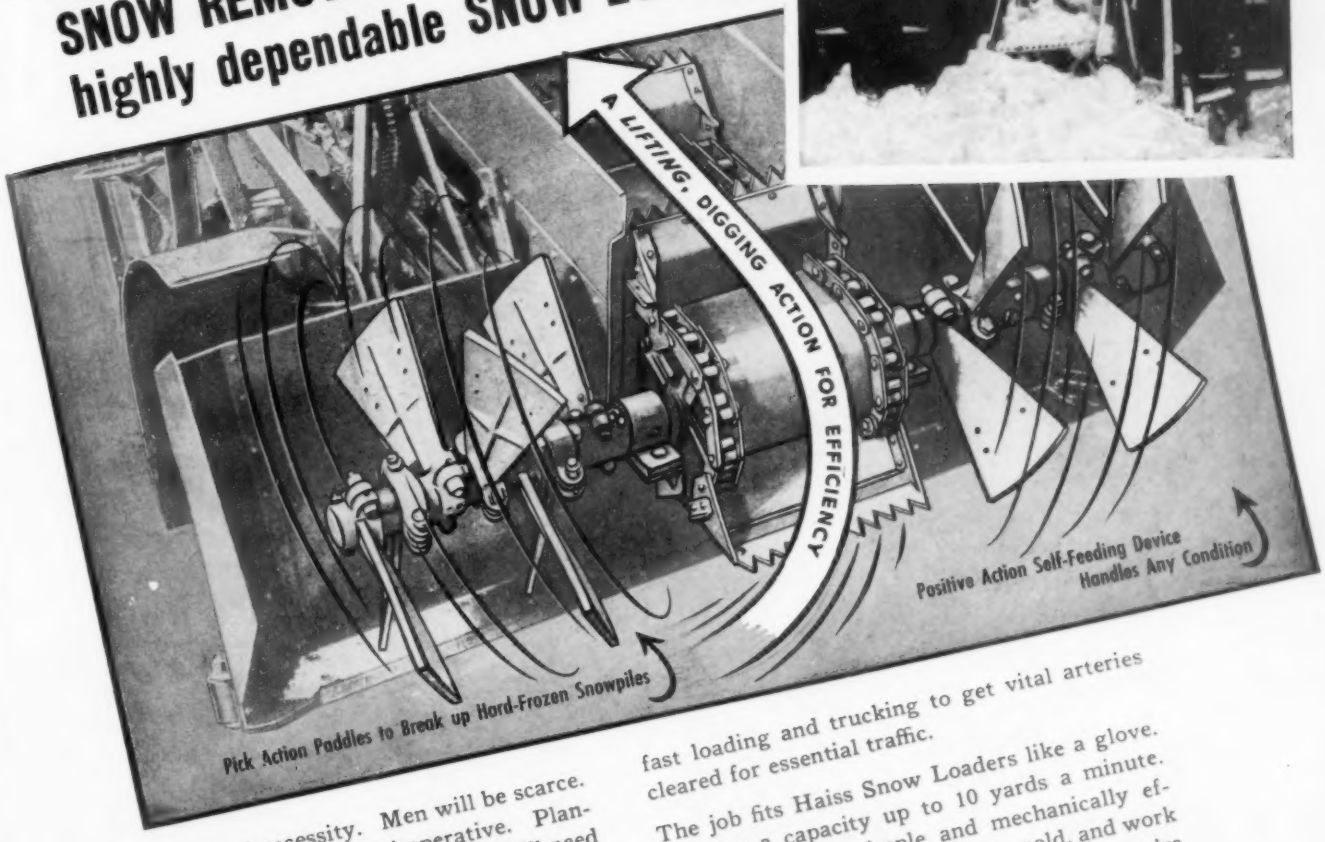
Write for the story of TAPAX and Trial Offer.

TAPAX MFG. CO., INC.
117 Spencer Pl., Mamaroneck, N. Y.

Put TAPAX — sticky side down — on flange. Replace cover.

CLEAR THE WAY . . .

★ Defense-busy Cities will need FAST SNOW REMOVAL . . . high-capacity, highly dependable SNOW LOADERS


A LIFTING, DIGGING ACTION FOR EFFICIENCY
Positive Action Self-Feeding Device Handles Any Condition
Pick Action Paddles to Break up Hard-Frozen Snowpiles

This is a year of necessity. Men will be scarce. Mechanical loading will be imperative. Planning ahead means ACTION NOW. You'll need fast loading and trucking to get vital arteries cleared for essential traffic.

The job fits Haiss Snow Loaders like a glove. They've a capacity up to 10 yards a minute. They're rugged, simple and mechanically efficient. They'll start in sub-zero cold, and work 24-hour shifts without a whimper. . . . If you're going to load snow into trucks, this is a machine you've got to know about—EARLY!

NOW ON CREEPER TREADS (MODEL 75C)

ON PNEUMATIC TIRES (MODEL 75W)

HAISS

George Haiss Manufacturing Co., Inc.
140th St. and Park Ave., New York, N. Y.
Please send me your bulletin 1140 on high-speed Snow Loaders.
Name..... Title.....
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The New

FLEXIBLE POWER DRIVE

Briggs & Stratton Motor
New Safety Clutch
All Roller Bearings
A Sure-Fire Starter
2 Speeds and Throttle

SAVE MANY HOURS OF HARD, LABORIOUS WORK

May be used to drive sewer rods as shown above, or with the FLEXIBLE all-steel winch as shown at the left.

F L E X I B L E
SEWER-ROD EQUIPMENT CO.
9059 Venice Boulevard . . . . . Los Angeles, Calif.
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Built to operate accurately . . . year after year . . . with minimum maintenance . . .

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WORTHINGTON-GAMON METER COMPANY
HARRISON, NEW JERSEY
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CENTRIFUGAL PUMPS FIRE HYDRANTS A.W.W.A. GATE VALVES

Manistee single-stage, double-suction pumps, 75-20,000 g.p.m. capacity

Manistee multi-stage pumps, 50-3500 g.p.m. capacity with heads up to 1600 feet

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GET A BETTER JOB AT LESS COST

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Hotstuf

WRITE US FOR BULLETINS

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ASPHALT HEATERS
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WEED BURNERS
TRAILER TOOL BOXES FOR SERVICE DEPARTMENTS

MOHAWK ASPHALT HEATER CO.
Frankfort New York

PICTURE what SNOGO means in your city!

Snogo is fast, easily handled and it won't back up out of the cut. A truck every 10 to 20 seconds packed full.

Right: Snogo can work at night when the traffic is light.

Below: Throwing snow on to the parkway and clearing the street to its full width.

LOOK at these photographs—actual operations in a busy city in the snow belt of America.

Snogo makes snow pickup fast and easy—a truck full in 10 to 20 seconds—a clean street with the absolute minimum of slush and slop to freeze into accident-causing ruts and glare ice.

Snogo cleans right to the curb—no banks are heaped against parked cars, gutters are open to drain and driveways are clear.

When Snogo gets through, the job is done until the next snowfall. There is nothing to drift and there is no expensive repeat plowing.

Snogo picks up and loads snow in *one* operation. Trucks can move up alongside Snogo in a steady stream. There is no traffic-delaying, time-wasting backing and filling to get under the discharge, and fast operation permits a material increase in city area covered with the minimum of equipment as compared to other methods.

Every city in the snow belt can afford Snogo today. There is a size for every budget. Let us tell you what other cities are doing.

KLAUER MANUFACTURING COMPANY

Dubuque, Iowa

Right: Drives and cross walks are left open. Compare this with blades and push plows that block them up.

. . . AND REMEMBER —
Snogo is absolutely guaranteed to handle any snow condition that will ever develop on any airport!

SNOGO

For Complete Snow Removal

Defense Depends on Open Roads

The EDDY Valve

The Eddy Valve has a number of distinctive features which it will pay you to study. For example, the gates are free to revolve on the trunnions, so as not always to seat in the same position.

Write us for further details.

Also manufacturers of the well-known Eddy Hydrant

EDDY VALVE COMPANY

WATERFORD — Representatives — NEW YORK

Jas. B. Clow & Sons, Chicago, Ill.
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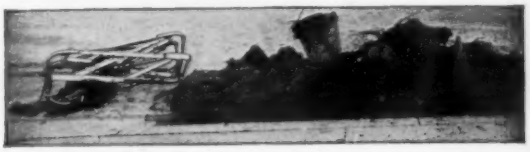
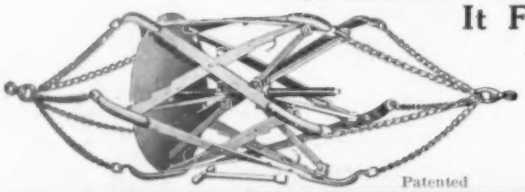
EXPANDING ROOT CUTTER & SEWER CLEANER



Open and in action removing roots and caked sediment like this.



Patented

It Fits in on Every Sewer Cleaning Job

Adjusted in 30 seconds to fit any sewer from 8 to 30 inches.

Will clean the entire sewer wall, top, and sides as well as the bottom, cutting and removing the roots and caked sediment, putting the sewer system in almost 100% clean condition.

Write for our new catalog on complete sewer cleaning equipment.

EXPANDING SEWER MACHINE COMPANY

108 East Walnut St. — Nappanee, Ind.

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De Luxe Chem-O-Feeder

Though we're "suffering" from this condition we will ship STANDARD units from stock as long as we can get materials!

Help us get you quick delivery by sending us priorities with your order.

1. *Send us a high priority with your order and you can get immediate delivery.*
2. *With A-10 or other low priorities we can ship reasonably quickly.*
3. *With no priority we can ship sometime, but when, is questionable.*

% PROPORTIONEERS, INC. %

"Chemical Feeder Headquarters"

99 Codding Street — Providence, R. I.

Pittsburgh-National METERS

IMO · TROPIC · ARCTIC-TROPIC COMPOUND · EMPIRE · NASH · GEM
ARCTIC · KEYSTONE · EUREKA · EMPIRE COMPOUND · STREEEMLINE

THE MOST COMPLETE LINE OF WATER METERS IN THE WORLD

PITTSBURGH EQUITABLE METER COMPANY

MERCO NORDSTROM VALVE COMPANY — Main Offices, Pittsburgh, Pa.

NATIONAL METER DIVISION, Brooklyn, N. Y.

★ ★ ★ ★ ★ ★ ★ ★ ★ ★

The BELLEVUE "One of the Few Famous Hotels in AMERICA"

ANNOUNCES . . . FOR THE WINTER SEASON

. . . hundreds of rooms and baths modernized . . . a beautiful, new, completely air-conditioned Coffee Shop — seating 400, open from early breakfast to late supper, featuring finest food, modern service at really popular prices. Other air-conditioned restaurants. Unsurpassed facilities for comfort and the enjoyment of true Philadelphia hospitality. Reasonable rates.

BELLEVUE-STRATFORD
IN PHILADELPHIA

CLAUDE H. BENNETT, *General Manager*

KILL THESE MEN AND YOU LICK AMERICA!

★ ★ ★ **Millions of defense workers, the very people upon whom America now most vitally depends — are in jeopardy today! In your own community, is not the rapid population increase from "defense efforts" constituting a menace to health and a danger to lives? Then recognize the fact that a Nichols Herreshoff Incineration plant for the disposal of sewage and garbage waste matter, is one of the most essential "defense plants" for your locality . . .**

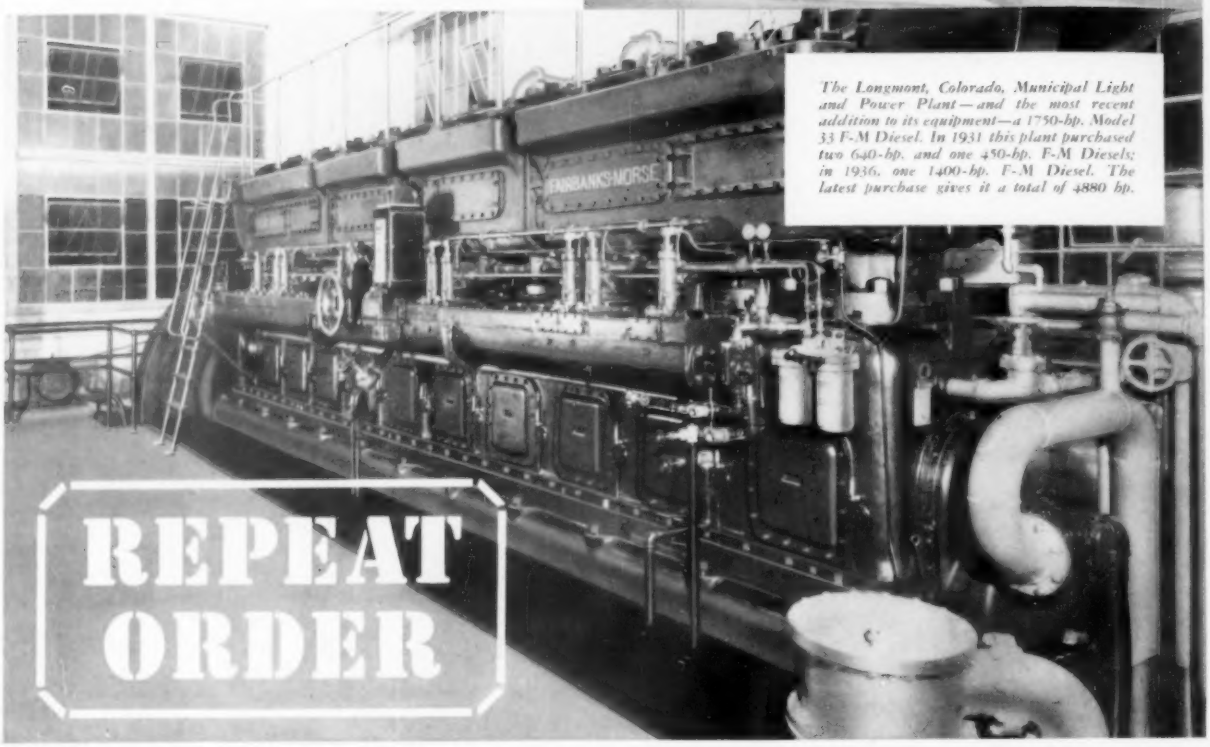
ASK INCINERATION HEADQUARTERS HOW BEST TO MEET THESE CONDITIONS:

1. **WHERE** the lack of sewage treatment facilities compels immediate construction to safeguard the health of rapidly increasing population.
2. **WHEN** sewage treatment facilities are so overloaded, by sudden population increases, that the quantity of sludge collected cannot be handled.
3. **WHERE** digesters and drying beds are inadequate to requirements of increasing population, and can be converted to sludge storage tanks for incineration.
4. **WHEN** neither sewage nor garbage disposal facilities exist and the funds available demand the economy of one unit to burn both wastes.
5. **WHERE** existing facilities for garbage disposal are being rapidly over-taxed and could be relieved by a combination unit to burn both garbage and sludge.
6. **WHEN** the mounting accumulation of sludge, from existing sewage disposal facilities, demand the relief of additional units to protect the increased population.

NICHOLS ENGINEERING & RESEARCH CORPORATION

60 WALL TOWER BLDG., NEW YORK, N. Y. NERCO UNIVERSITY TOWER BLDG., MONTREAL, P. Q.

LONGMONT Buys Its Fifth F-M DIESEL!



The Longmont, Colorado, Municipal Light and Power Plant—and the most recent addition to its equipment—a 1750-hp. Model 33 F-M Diesel. In 1931 this plant purchased two 640-hp. and one 450-hp. F-M Diesels; in 1936, one 1400-hp. F-M Diesel. The latest purchase gives it a total of 4880 hp.

● When the 1750-hp. Model 33 Fairbanks-Morse Diesel went into operation in the Longmont, Colorado, Municipal Light and Power Plant, it constituted the *fifth F-M Diesel* this municipality had purchased since 1931.

Today Longmont has one of the finest 5-unit light and power plants west of the Mississippi. Its ten-year record is one of constantly *lowered tax rate* and constantly *increased civic improvements*, plus an extremely advantageous rate for Longmont citizens.

And this case history is *not* unusual. Low taxes or none at all, free street lighting, free fire-fighting equipment, and other civic benefits nearly always go hand in hand with F-M Diesel operated municipal power plants.

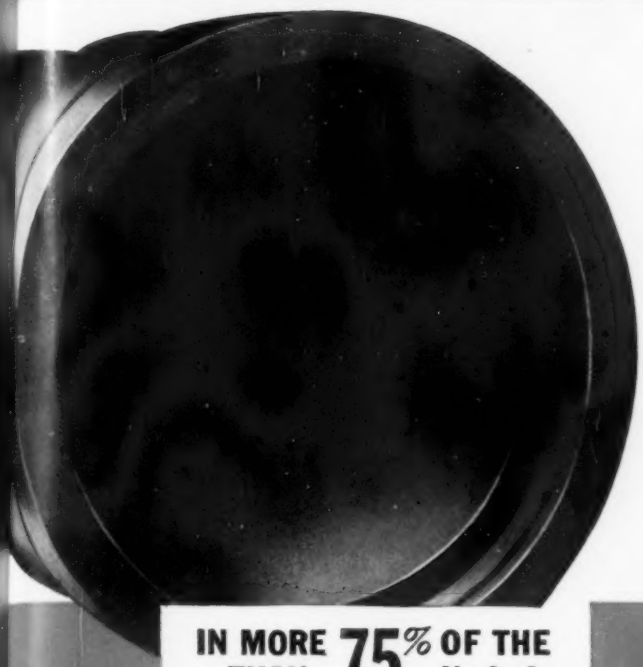
Find out, without cost or obligation, what F-M Diesel power could do for your citizens. Write to the largest U. S. manufacturer of a complete line of Diesels—Fairbanks, Morse & Co., Dept. L10, 600 S. Michigan Avenue, Chicago, Ill. Branches and service stations throughout the United States and Canada.

80% of All F-M Municipal Sales Are REPEAT ORDERS

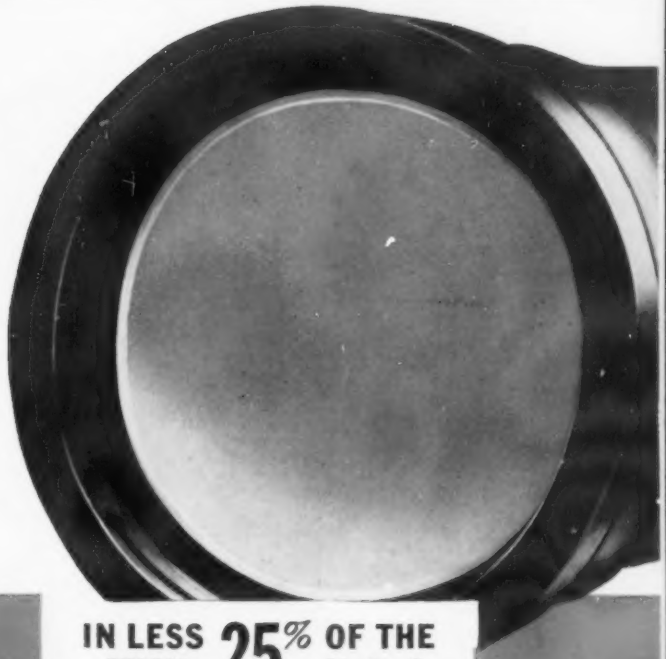
FAIRBANKS·MORSE F-M DIESELS

MOTORS ELECTRICAL MACHINERY RAILROAD EQUIPMENT WASHERS-IRONERS STOKERS
PUMPS FAIRBANKS SCALES WATER SYSTEMS FARM EQUIPMENT AIR CONDITIONERS

100 YEARS of useful life as a structure



IN MORE THAN 75% OF THE U. S. A.
YOU GET BOTH
with standard tar-dipped cast iron pipe



IN LESS THAN 25% OF THE U. S. A.
TO GET BOTH
use lined* cast iron pipe

100 YEARS of high capacity as a carrier

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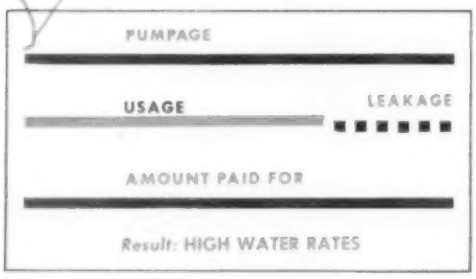

MAXIMUM GALLONAGE ACCOUNTED FOR
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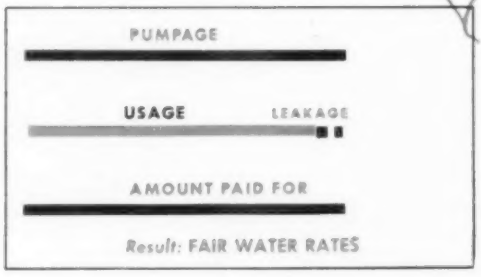

Water Meters, by giving you the figures on the amount of water consumed as opposed to the amount of water pumped, may reveal a disturbing amount of leakage in your mains. Only by the accurate figures which meters will provide can you keep that leakage under control and save yourself unnecessary pumpage and treatment costs on millions of gallons.

P.S. *Although the usage of water is shown the same in both diagrams (above) for the sake of simplicity, in actual practice water consumption would be less, with water meters, because less water would be wasted by consumers.*

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The American City

The War Emergency

is creating numerous situations which involve important extensions and improvements of municipal services. In many cases this necessitates considerable purchases of up-to-date equipment.

The companies listed below, whose advertising you will find in this issue of THE AMERICAN CITY, will be glad to cooperate with you in modernizing methods, materials and machinery.

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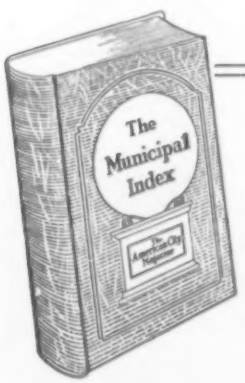
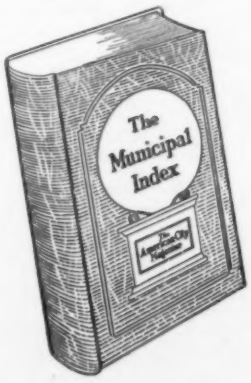


In addition to the advertisements which will be found in this issue of THE AMERICAN CITY on the pages as indicated above, condensed catalogs of many of these manufacturers will be found in THE MUNICIPAL INDEX, the big annual reference volume for city, town and county officials published by THE AMERICAN CITY, 470 Fourth Ave., New York.



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Mack

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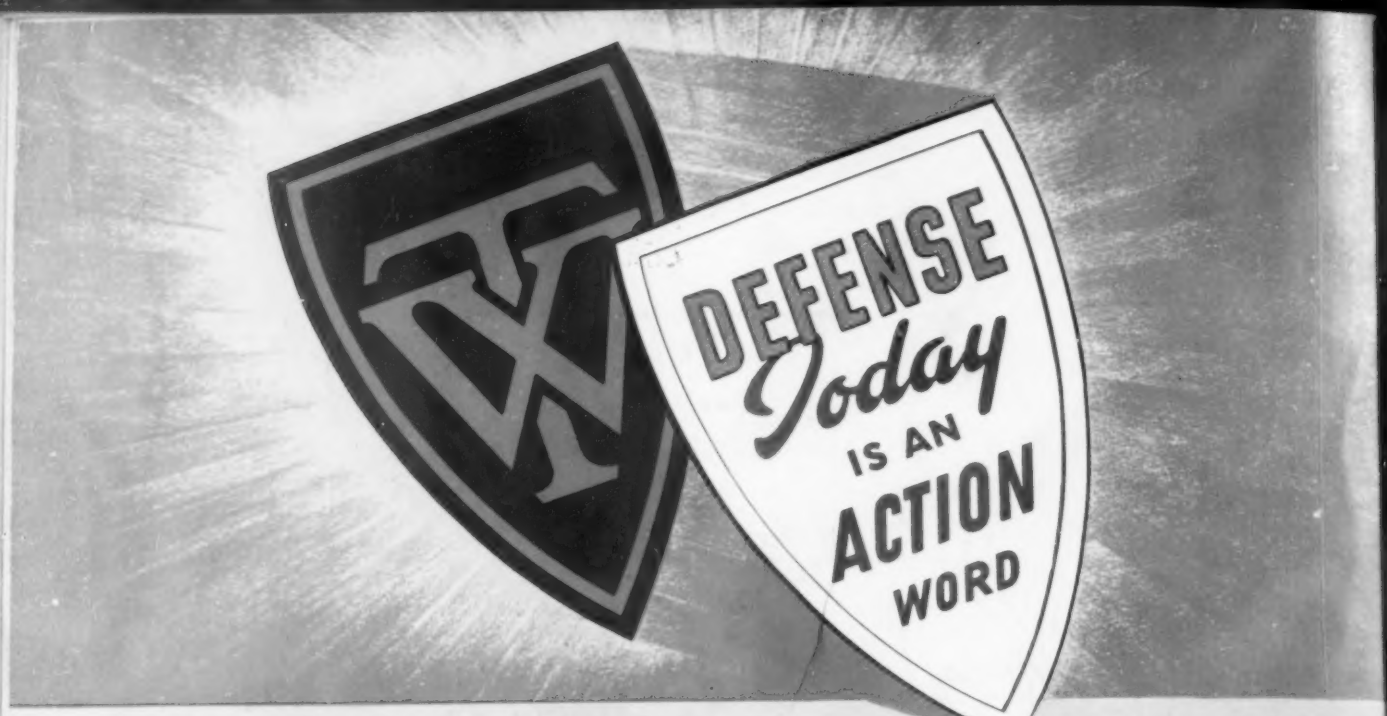

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In The Cause of Safer Water Supplies

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SA-124

"The Only Safe Water is a Sterilized Water"

WALLACE & TIERNAN CO., INC.

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BELLEVILLE, NEW JERSEY • REPRESENTED IN PRINCIPAL CITIES

Volume LVII — Year 1942

The American City

Published by

American City Magazine Corporation

470 Fourth Avenue, New York

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